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New Job Printing Press.

The extremely high prices which have heretofore been demanded for the ordinary description of power printing presses, rendered it very desirable to obtain a press of such simplicity of construction and efficiency of operation as would enable it to be equal in all respects to any now before the public, and from its low price be within the reach of all printers engaged in job work. The press which we illustrate on this page combines these requisites in a remarkable degree, its principal feature consisting in so jointing and combining the bed and platen of the press that one movement of the bed performs all the operations of printing, namely, distributing the ink, working the form, conveying the sheet to the type, and giving the impression; thereby greatly simplifying the press, prescing its cost, and increasing its convenience and efficiency.

Fig. 1, of the engravings, represents a perspective view of the improved press, and Fig. 2, is a vertical section through the upper parts of the same, with the platen and bed in the position they assume when giving an impression. The same letters in both figures indicate corresponding parts.

Within the frame, A, which is made of suitable form, strength and material to contain and support the several parts of the press, is hung a bed, B, by suitable arms, B′, to a horizontal shaft, turning in suitable boxes at either end, and around which it is free to oscillate. The bed, B, arms, B′, and shaft, are cast in one piece, and on this account are cheaper and in every way better than if they were formed separately. At each end of the bed is placed a piece, C, which is type high, and serves as a bearer for the inking rollers to run on while inking the type, which are placed on the bed, B, and these pieces, C, being extended at their ends in the form of segments of a circle, cause the inking rollers to be brought into contact with the roller, N, to receive a fresh supply of ink as they pass the same, at both sides of the form, and by this means to render them capable of transferring a corresponding fresh supply of ink to the type from either side of the form. At a point, E, in the plane of the bed there is hinged, by means of arms cast upon the bed, B, a frame, F, supporting the platen, P, which is made adjustable for the purpose of altering the impression, by means of set screws, S, and springs. The frame, F, is attached by the joint, I, to arms, J, extending radially from a horizontal shaft parallel to the face of the platen, P, and bed, D, and having suitable bearings in the frame. The arrangement and purpose of this combination of parts are such, that when the shafts of the arms, B′, and J, and shaft, I, are coming into a straight line, as in Fig. 2, the arms, B′, supporting the bed and the arms, J, form progressive levers, for the purpose of giving the impression; but when the bed recedes to the position shown in Fig. 1, the platen, P, assumes a horizontal position, to allow the printed sheet to be removed and a blank substituted. The inking rollers are placed in such position to allow the bed, B, with the form, to pass back and forth under them during such movement. As the segmental ends of the end pieces, C, are situated further from the center, upon which they move, than the face of the type, which pass under the inking rollers, the said rollers are raised and brought in contact with the roller, N, which is made to vibrate laterally, by means of a screw cut upon one of its bearings. By this arrangement a thorough distribution of the ink is given, with a short distributing surface, and the rollers are also allowed to ink the form with perfect freedom freshly from either side of the form, which they could not do while rolling in contact with the roller, N. A shaft is suspended in ears cast on the platen, P, to which is attached the frisket. This frisket consists of two arms made adjustable for the purpose of of clasping different sized sheets, and is provided with springs and other attachments for operating it at the proper intervals. The bed, B, receives its motion from a treadle, T, having a connection with a pinion shaft, H, through a rod, U, and crank, L, said pinion working in gear with a cog wheel, H′, which is attached by a pitman rod, G, to the arm, B^2, of the bed, B. If desired, a direct motion may be given the shaft of the wheel, H′, by a pitman rod, or band from any convenient power.

The mode of operation is as follows:—The blank sheet being placed upon the platen, P, motion is given the wheel, H′, which causes the bed, B, to pass under the inking rollers and to receive a supply of ink; the frisket closes down upon the sheet, holding it firmly in its place, and when the bed assumes a vertical position, as shown in Fig. 2, the sheet and type are pressed into contact, thus giving the impression. After this the bed, B, and platen, P, are raised, and the rollers and form freshly inked from both sides of the form, as before stated. It is not necessary for the success of this invention that the line which bisects the center of the shafts, to which the arms, B′, J, are attached, and shaft, I, should be horizontal, as it is also intended to make it vertical, in which case grippers will be attached to the frisket for the purpose of taking off the sheets direct from a feeding table. In card printing, the frisket may be removed, and another attachment for retaining and discharging the cards may be substituted.

This admirable printing press is warranted, by its inventor, equal to any in use, for the reasons that it will print a full size form with even impression; it will, from the perfect method of distributing the ink freshly from both sides of the form, produce a clear impression without any tendency to slur; that it is convenient in putting in, correcting, planing, or overlaying the form, taking out or putting in rollers, setting grippers, adjusting impression, or clearing up; and finally that it will print with ease either way, and at any speed at which it is possible to supply the sheets, and will not from its superior simplicity cost near as much as the ordinary job presses now in use.

It was patented 23rd of December, 1856, and any further information can be obtained by addressing the patentee, G. H. Babcock or C. Potter, Jr., Westerley, R. I.

BABCOCK'S PATENT JOB PRESS.

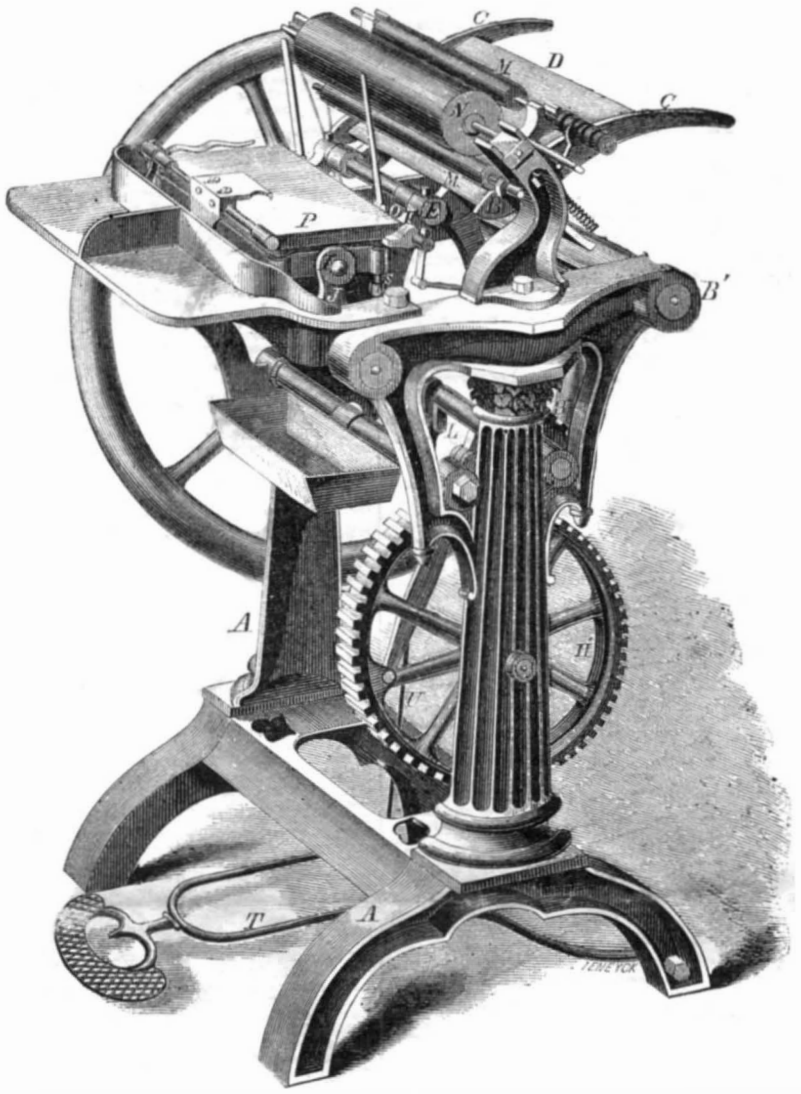
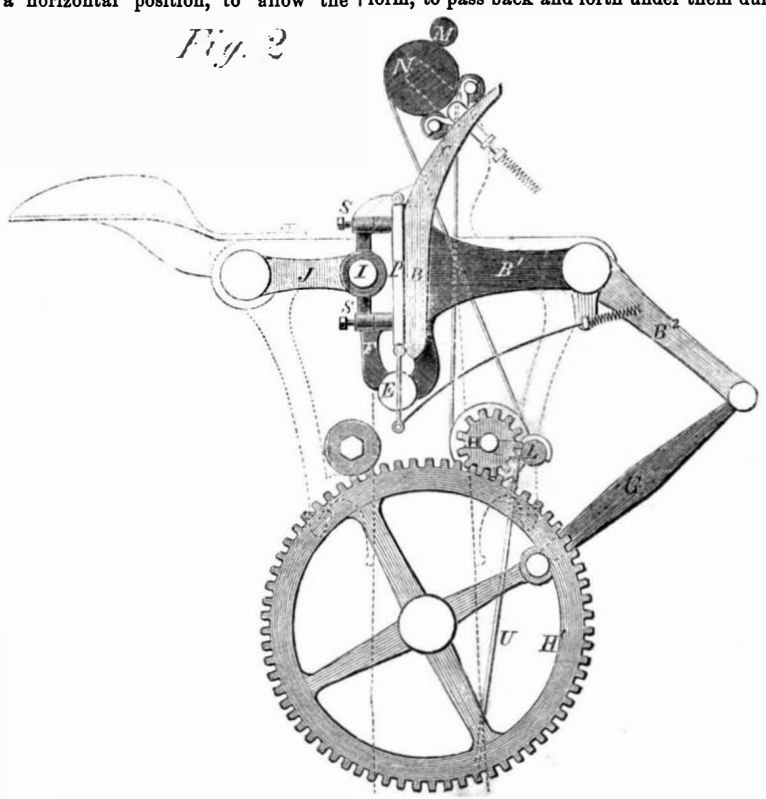


Fig. 2



Machine for Covering Tacks.

C. G. Russell, of Birmingham, Conn., has invented a machine for making leathered carpet tacks, which feeds the tacks and leather automatically—the feeding of the leather or other material being performed by the tack itself after it is driven into the leather, thereby saving the leather that would otherwise be cut if the leather were fed by an arbitrary feeding device. The construction of the machine is simple, the operation perfect, and well adapted to the economical manufacture of carpet tacks.

At Birmingham, England, eight tuns of wire per week are made into hooks and eyes.

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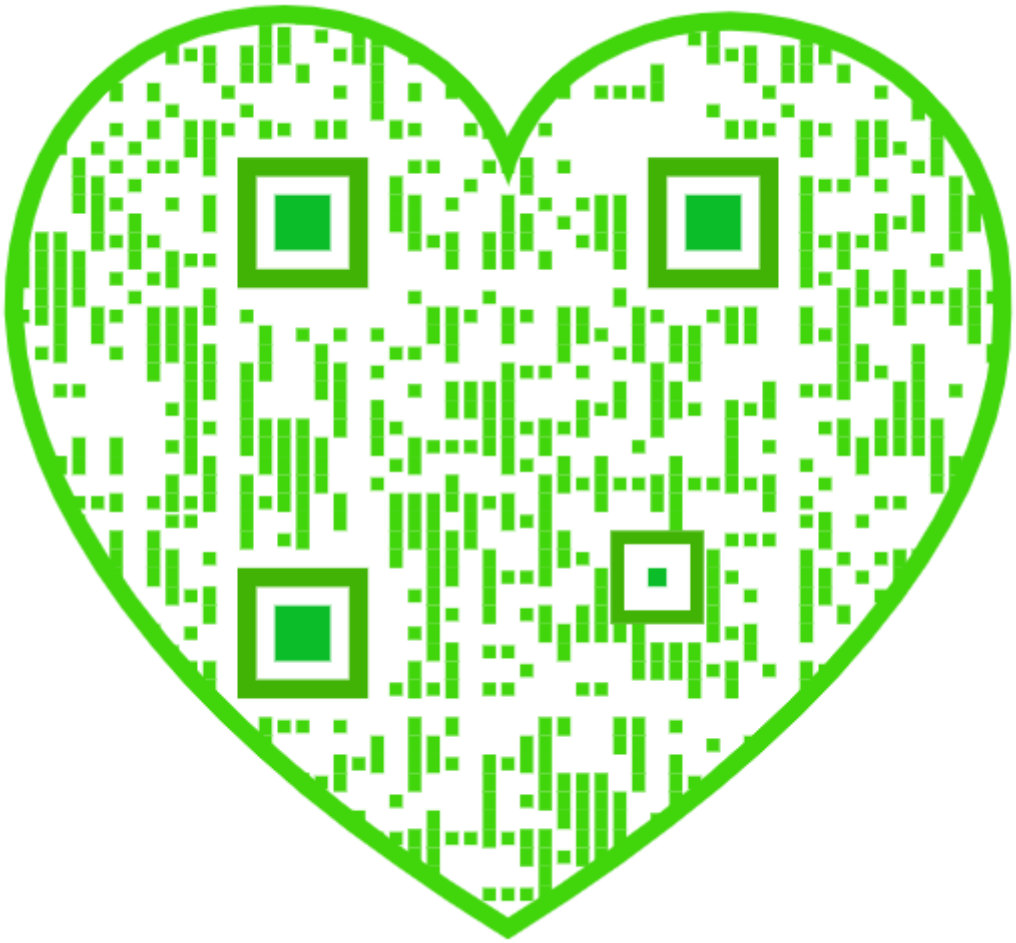

Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 3, 1858.

[*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

CULTIVATORS—William Adams, of Detroit, Mich. : I claim the arrangement of the loop at the juncture of the cross and side bars in combination with the binding pin and the double looped yoke extending transvereely from one side bar to the other, for holding the handles, in the manner and for the purposes specified.

GOVERNOR FOR STEAM ENGINES—Alban Anderson, of Lancaster, Ohio : I disavow all claim to the invention of any single or isolated part of the machinery used in the combination described, each and all of such parts, taken separately, being in common use.

But I claim the combination of machinery described, and the production thereby, or by its equivalent, of the resultant force defined, and the application of such resultant force to the regulation of the movement of machines or engines.

WHEAT SEPARATORS—W. H. Angel and M. Coffeen, of Watertown, N. Y. : We claim, first, The arrangement of the three perforated plates, having holes of the same diameter or area, and placed at the same inclination with the fourth perforated plate, having holes of a less diameter or area than the other plates, and at a greater inclination, as set forth.

Second, We claim the spring bar or rod, P, and yoke, R, in connection with the plates, Z, and bars, N, at the other end of the plate box, for giving to the plate box the compound motion, as described.

KNIFE SHARPENER—John J. and Austin T. Armstrong, of Brooklyn, N. Y. : We claim the combination and arrangement of parts described, that is to say, securing the file by its edges between the inclines, c and d, by which the advantages stated are secured, as set forth,

STEAM ENGINES—Henry and F. J. L. Blandy, of Zanesville, Ohio : We claim the application to portable steam engines of a hollow continuous bed plate, in the manner substantially as described, for the support and attachment of the operative parts of the engine, whereby the latter in working is rendered independent of the contraction and expansion of the former, and the boiler relieved from the direct strain of the engine, as set forth.

METHOD OF REMOVING SUBMARINE DEPOSITS—Eli Brazelton, of St. Louis, Mo. : I claim removing sand, mud or gravel from within sunken wrecks, or from submerged articles, with a view of raising the same, by means of a current of water forced by any proper means through a tube or spout, by which the current is directed and made to act at the desired spots, substantially as described.

[A full description of this improvement appears on page 387.]

SUBSTITUTE FOR THE CRANK—Aaron Brooks, of Crawford county, Ind. : I claim a perpendicular pitman and the dispensing with a crank by means of the wheel B B, attached to the shaft, A, and the slide or rollers, E F, attached to the pitman, C C, and moving in the groove, D D′, the said pitman always moving perpendicular.

FLOURING MILLS—Robert J. Brown, of Perry, Pa. : I claim, first, The combination of cups without backs, with a perforated strap, for the purpose of elevating and discharging meal in the manner set forth.

Second, The combination of a ribbed pulley with a conveyor on the bolting shaft, in the manner and for the purpose specified.

Third, The arrangement of two, three, or more bolts within and concentric with each other, and upon the same reel shaft, in the manner and for the purpose set forth,

GRAIN AND GRASS HARVESTER—Robert Bryson, of Schenectady, N. Y. : I am aware that cams similar to D have been previously used.

And I also am aware that the double crank connection is an old and well-known device.

I do not claim, therefore, any of the parts separately, or in the abstract, irrespective of the arrangement as shown and described.

But I claim placing the cam, D, in front of the driving wheel, c, and operating it therefrom by means of the double crank, i, and the rods, h h, when these several parts are constructed and arranged relatively with respect to each other and to the bar, E, in the manner and for the purpose set forth.

[This invention relates to an improved arrangement of parts for operating or driving the sickle, whereby the proper speed is given the sickle from the driving wheel by the employment of a very few parts, with but little friction, and capable of being so disposed as to favor, to a very considerable extent, lightness of draft, with a tendency to prevent or counteract what is known as "side draft."]

METALLIC FENCE—William Bush, of Harrisburgh, Pa. : I claim the construction of the base rail, B, with a continuous dovetail groove, into which are slipped the panels, A, with a corresponding tenon, and the top rail with continuous groove, fitting on the top of the panels as described, the whole constructed and operating as described, and for the purposes set forth.

CONVERTING RECIPROCATING INTO ROTARY MOTION—Isaac Chapman, of New York City : I do not claim the separate or individual parts of the described apparatus.

But I claim the ratchet wheel or wheels, F F, in combination with the pawls, 1 2 3, &c., arranged and operated by means of a parallel motion, in the manner substantially as described and shown.

I also claim the manner of throwing the pawls, 1 2 3, &c., in and out of gear with the ratchet, while the power is in motion, by means of the levers, D d, and the parallel spring slide, e e′, in the manner and for the purpose set forth and shown.

APPARATUS FOR MAKING COFFEE—John Denley and Thomas H. Heberling, of Warsaw, Ill. : We do not claim the process of scalding coffee and boiling it afterwards by additional heat, or forcing water through ground coffee resting in a strainer,

Neither do we claim the application of a heater to a vessel containing coffee,

But we claim, first, The apparatus substantially as described, for the forcible expulsion of the water through the bed of the coffee, resting on the strainer, i, in the mouth of the inverted vessel, a, by the pressure of steam in the upper part thereof, produced when the red-hot heater, e, is inserted in the central tube, d.

Second, We claim the cup, l, for retaining a part of the water around the foot of the heater tube, d, and the tin arch, m, for the purpose of preventing the joint at the end of the heater tube from becoming unsoldered when the rest of the water is driven from the interior of the vessel, as described.

RAILROAD FROGS—James M. Dick, of Buffalo, N. Y. : I claim, first, The construction of the chairs and arrangement of the parts of the frog upon them, in the manner described, by which I am enabled to remove any part of the frog without disturbing the other parts, as set forth.

Second, The combination of the underhanging jaw upon the rail, E, with the rebated chair, K, as described, for the purpose set forth.

Third, Arranging the frog upon chairs in such a manner as to leave open space below the rails at the point where the rail, E, comes up to the rail B and C, substantially as and for the purpose set forth.

COP TUBES FOR SHUTTLES—James Eaton, of Townsend Harbor, Mass. : I do not claim the use of a cop tube of entire length of the spindle, when used alone and unconnected with the button, or its equivalent, to guide the yarn over the point of the spindle.

But I claim the employment of a button upon the end of the spindle or of the cop tube, for the purposes specified.

Second, In combination with the above, I claim a cop tube of a length sufficient to hold the entire cop, as set forth.

Third, I claim a removable spindle in combination with the button and long cop tube, operating in the manner substantially as set forth.

LAMPS—William Fulton, of Cranberry, N. J. : I claim the register formed of the perforations, e, in the top, A, and the perforated plate, f, placed within the top, in combination with the perforated or air-distributing plate, A, the whole being arranged substantially as and for the purpose set forth.

[This invention relates to an improvement in lamps for burning coal oil, and other substances that are rich in carbon, and which require a considerable amount of oxygen to support a proper combustion for illuminating purposes. The object of the invention is to adapt a lamp for burning equally well all the different substances used for illuminating purposes, however much they may vary in the quantity of carbon they contain. This object is attained by applying a register to the cap of the lamp, and using in connection therewith a perforated plate or air distributor, the parts being so arranged that a greater or less amount of oxygen is admitted to the flame according to the amount of carbon the burning material possesses; a complete combustion of its elements is thereby effected, and a flame of the greatest illuminating power attained.]

SLEEPING CAR FOR RAILROADS—Charles L. Harrington, of Buffalo, N. Y. : I claim the single rods, v v, in relation to the berths or couches, Nos. 1 and 2, the said rods being without collars or projections, and attached at each end to the side of the car, in combination with the shifting seats with slotted arms, A B, and reversible and convertible backs, a a, the rail, o, and bead, t, with the partitions, s s, the whole constructed, arranged and operated in the manner and for the purposes set forth.

TUBE FOR CONVEYANCE OF SOUND—R. G. Hatfield, of Mount Vernon, N. Y. : I am aware that implements such as speaking trumpets and musical wind instruments, have been provided with flaring mouths or ends, for the purpose of projecting the vibratory lines of sound parallelly and the paraboloid and approximate forms have been given the mouths of such implements. I therefore do not claim, separately, the mouth, B, for that has been previously used.

But I claim the mouth, B, in combination with the reflector, E, the mouth and reflector being of paraboloidal or approximate form, and arranged relatively with each other, so as to operate substantially as and for the purpose set forth.

I further claim the plate, F, placed in the elbow, b, as described, for the purpose specified, and also the combination of the mouth, B, reflector, E, and plate, F, when arranged to act conjointly as described, for the purpose set forth.

[A full description of this invention will be found on another page.]

APPARATUS FOR CONDENSING AND PURIFYING GAS—August Hendrickx, (assignor to Victoria Hendrickx), of New York City : I claim, first, A gas condenser which has the junction between its upper and lower chambers, B C, accomplished by means of a water channel, G, formed round the upper edge of the lower chamber, c, and a flanch, F, formed round the bottom of the upper chamber, B, in combination with stationary rods D D, which sustain the upper section and adjusting suspension screws, E E, or their equivalents, weights, cords, and pulleys, substantially as and for the purposes set forth.

Second, The specified arrangement of condenser and purifier on the same level and within the same chamber, substantially as and for the purposes set forth.

[This is the third patent secured by Mr. Hendrickx through our Agency, on his gas generating cooking range. The present arrangement consists of a peculiar construction of gas condenser, whereby the condenser and purifier are brought together within the same chamber and yet kept separated, and whereby increased facilities for inspecting and cleaning the interior of the condensing and purifying chambers are afforded. With this improvement and the two others which have preceeded it, it is believed Mr. Hendricks has produced a very simple, cheap, and safe portable gas generating cooking range.]

FIELD FENCE—David M. Heikes, of Franklin Township, York county, Pa. ; I claim the construction of the fence into separate panels by framing the posts uprights and rails together by means of beveled tenons and mortises, and the application of the circular braces, by the application of which the fence can readily be raised or lowered at one end from a horizontal to any angular position, and the posts and uprights will in every case stand perpendicular to the ground.

FIELD FENCE—Cornelius Horton, of Phelps, N. Y. : I claim the combination of the staple with the two panels, the braces, and the key or pin, all being arranged and operated substantially in the manner and for the purpose set forth.

GAS STOVES—Moses W. Kidder, of Lowell, Mass. : I claim the condensing chamber, B, with its trap, I, and pipe, D, in combination with a combustion chamber, operating in the manner substantially as set forth.

GAS BURNERS—Frederick C. Krause, of New York City : I do not claim to be the first inventor of a porous gas burner, as I am aware that they have been constructed of wire gauze, and by making beds of such material covered with broken pumice stone, and of some other substance.

But I claim the manufacture of gas burners, or those parts of them from which the gas is to be emitted, of the porous composition produced by the union of the substances specified, in the manner set forth.

[We have seen this gas burner in operation, and believe it to be the best gas burner for heating purposes yet produced.]

MODE OF SEPARATING FIBER—Azel Storrs Lyman, of New York City : I claim the mode of separating the fibers of wood, flax, or other fibrous substances, for paper, cloth or other purposes, by charging the mass with hot water, steam, compressed air, or other elastic fluid, while in a cylinder or other suitable receptacle, and then causing it to be projected from said receptacle into the atmosphere, or any space where it is subjected to a sufficiently less pressure to cause its disruption by the sudden expansion of the fluid within it, substantially as specified.

PRESERVE CANS—Emmons Manley, of Marion, N. Y. : I do not claim, broadly, the formation of a wax space between the lip and the stopper.

But I claim the combination of the depression around the mouth of the can, and the cup-formed stopper, constructed and operating substantially as described.

[This invention consists in forming a depression around the edge of the mouth of the can, and fitting the mouth with a stopper of the form of a cup, whose exterior combines with the depression round the mouth, to form a channel to receive the sealing composition or cement, and whose interior serves to receive cold water, to cool and cause the setting of the cement after the closing and sealing of the can, and to receive the hot water to melt or soften the cement, for the purpose of enabling the stopper to be removed when it is desired to open the can.]

MODE OF OPERATING PRESSES—David L. Miller, of Madison, N. J. : I do not pretend to claim the individual or separate parts of the described apparatus for operating presses, as my patent on "lifting jacks" covers both the gearings, outer cylinder, B, and inner cylinder, C.

But I claim the application of two distinct actions by means of the bevel gearing, D, endless screw gear, G, barrel, B, cylindric nut, c, arranged and operated substantially as described and shown.

PRINTING PRESSES—Frederick B. Nichols, of Morrisania, N. Y. : I claim, first, The employment of the polished metallic roller, K, arranged immediately in front of the inking roller, H, and made adjustable by set screws, so as to enable its smooth periphery to be pressed against the periphery of the printing cylinder on a line parallel with the axis of both, and with such force as to prevent any ink on the engraved surface of the printing cylinder from passing between the two, and thereby removing the excess of ink from the smooth portions of the electrotype or thin plate, and causing the same to descend over the rising side of the said polished roller, K, into the ink trough, M, as described.

Second, I claim arranging the rollers, P P′, and endless band, R, over the same, in front of, and in such relation to the periphery of the printing cylinder, C, as to cause the descending portion of the endless band, R, to extend from the same, tangential to a circle smaller than it in diameter, and to bear upon a portion of the periphery with an equal degree of tension over every part which it reaches, and giving to the said part of the endless band a zig-zag movement by means of the zig-zag grooved drum, Y, and lug or arm, b, in the manner and for the purpose set forth.

[A notice of this improvement will be found on another page.]

SAFETY WHIFFLETREE—George F. Oulten, of Norfolk county, Va. : I claim the hooks, D, constructed with two different angles, and which allow the traces to commence detaching as soon as they commence revolving, and are released entirely at one-fourth of a revolution operating as and for the purposes set forth.

MONEY TABLE—William Painter, of Wilmington, Del. : I claim the combination of the dish or seat, A, with its levers, D D, and slotted guide, C, seated and arranged as set forth and shown, composed of wood, or of a metallic substance, or composed of both wood and metal, for the purpose of a money-changer or money-receiver; not limiting myself to the exact form of the dish or seat, A, so that the construction is substantially the same as to guide the money without any possibility of its falling elsewhere than into the palm of the hand.

HUBS FOR CARRIAGE WHEELS—Norman Platt, of Jackson, Miss. : I know that metallic hubs are not new, nor are clips to secure the spokes, perhaps, a novelty; nor is cast boxing, as such, the subject of a patent, while the peculiar construction and the mode of securing the one I have described may be, still,

I claim the combination of a flanged metallic hub for carriage, wagon, and buggy wheels, with clips to stay and strengthen the spokes, together with a metallic boxing for said hub, secured by a swelled head screw and tap, substantially as described.

STOVES—Andrew Ralston, of West Middletown, Pa. : I claim, first, The arrangement of the side chambers, 1, the center chamber, B, and the regulating valves, e, of the fan on the collar of the stove, where the pipe is usually attached, as described and set forth.

Second, The arrangement of the curvated bearing, w, the opening, 4, the cam ratchet, g, the ratchet pawl, f, the damper, p, with its three journals, and the division plate, o′, as described, and for the purpose set forth.

Third, The arrangement of the plates, m′ and m″, with their division pieces, x, and the openings, 5, and the large openings for the cooking vessels, as described and for the purpose set forth.

COMBINED BROILING FURNACE AND COOKING RANGE—William Resor, of Cincinnati, Ohio : I claim the described arrangement of the grates, A and B, passages, C F G, and damper, c, or their equivalents, operating as set forth, to temporarily connect the charcoal grate with the main fire so as to ignite its contents and afterwards disconnect them so as to burn independently.

BRAKES FOR RAILROAD CARS—John W. Rice, of Springfield, Mass. : I claim, first, The nut, H, and screw, I, and its arrangement when used for braking railroad cars, substantially as described.

Second, I claim my new combination, viz., the bar, N N, extending from one brake to the other, the double fulcrum lever, M, and the rods, S R, playing through and against the double fulcrum lever, M, and the arrangement of the chain, J, and pulley, F, when used in combination with each other, and operating substantially as described.

OX YOKES—Joseph H. Riggs, of Gloucester, Mass. : I claim the racks, a and b, arranged and operating in the manner substantially as set forth, for the purpose specified.

CHUCKS FOR CENTERING, &c.—Daniel N. Smith, of Boston, Mass. : I claim the described centering tool, consisting of the chuck, C D, constructed and operating as set forth, in combination with the shafts, G and I, arranged and operating as described.

SEWING MACHINES—E. Harry Smith, of New York City : I claim forming the stitch by means of the detached looper specified, operating in combination with the needle, and passing entirely through the loop, in substantially the manner and for the purposes described.

I claim the spreader, 10, on the side of the looper, for the purposes specified.

I also claim the revolving and oscillating lever, h, when constructed and arranged in the manner described to drive the looper, g, substantially as specified.

ARGAND GAS BURNERS—Joseph E. Stanwood, of Malden, Mass. : I do not claim the argand burner as constructed with two chambers connected by tubes so arranged as to allow the air to flow between them into the space surrounded by the upper or annular chamber.

But I claim the improved argand burner, as made with its several supporting tubes of its annular chamber extended down within the lower or receiving chamber and around its entrance hole or passage, substantially in manner as described, and for the purpose of preventing noise or singing of the flame when the burner is in operation.

I also claim the combination and arrangement of the described perforated partition, with the annular or upper chamber of the burner, and having its perforations or spaces between the same, disposed with respect to the mouths of the inlet tubes, substantially as specified.

APPARATUS FOR PURIFYING GAS—Andrew Walker, of Claremont, N. H. : I claim the construction of the cover of the horizontal washer, A, with teeth, j, as described and for the purpose set forth.

PEGGING MACHINES—Edgar M. Stevens, of Boston, Mass. : I claim, first, A peg wood box or receptacle, s, which is vibrated or reciprocated so as to bring the peg wood, s s s, upon the knife, r, for the purpose of splitting a peg from the peg wood, and which is so located and arranged as to present the peg to or directly over the hole in the sole into which it is to be driven.

But I do not claim, broadly, any moving peg wood box, which is arranged remotely from the awl hole, made in the sole, and there delivers the peg wood or pegs, which ultimately are fed to the awl hole into which they are to be driven.

Second, In combination with the vibrating or reciprocating peg wood box s, a stop, which is adjustable to the length of the peg wood, s s s, and is located in the mouth of s, near the peg tube in f, and within less distance of the plane of the edge face of the knife, r, than the bigness of one peg, and whose function is to hold the peg wood against the action of the knife in splitting off the peg, and this I claim whether such stop forms a part of the cover of the peg wood box, S, or is separate therefrom.

Third, I am aware that it is not new to use a feed instrument having a compound movement like that described for m, that, therefore, I disclaim.

But I claim the mechanical means, or their equivalents, for producing said compound movement of m, the same consisting of the bell crank lever, u, hinged to m, and the friction block, w, which is arranged to slide in the slot in u, both u and w being arranged to pivot upon x.

Fourth, The use of a spring (the spring on v), or its equivalent, in combination with a peg wood feeder, m, having a range of feed movement, when unobstructed, greater than the bigness of a peg, for the purpose of rendering the movement of the feeder, m, self-regulating, as set forth.

CASE SHOE BRUSH—Charles D. Thum, of Philadelphia, Pa. : I do not claim to be the inventor of any of the parts taken separately.

But I claim the combination of the brushes and case, as shown, the same being made of suitable material, such as wood, metal, india rubber, or its equivalents, and of any desirable shape, the whole being arranged and combined as set forth and shown, for the purposes specified.

HARVESTERS—J. V. Trump, of Summerville, N. J. : I do not claim any of the devices separately.

But I claim the combination of the knife guards, D, with the press plate, A, the finger beam, C, and the reciprocating cutters, E, when these several parts are constructed and relatively arranged as described, to operate conjointly in the manner and for the purpose set forth.

FIRE PLACES—Wm. R. Warden, of Boston, Mass. : I claim the combination and arrangement of the ornamental metallic frame D, and vertical slide F, containing smokepipe opening within the fireplace in the manner and for the purpose described.

[The nature of this invention and improvement consists in inserting and securing in fire places a metallic frame within which is placed a vertical plate perforated for the reception of a stove pipe, and capable of being raised and lowered to accommodate the opening to the stove pipe, in such a manner as to form an ornamental front which shall entirely close the fire place, and be capable of easy attachment and detachment.]

APPARATUS FOR PURIFYING GAS—John Waterhouse, of Little Falls, N. Y. : I claim introducing the gas into the purifier underneath a table. or its equivalent, near the surface of the lime water, so that it (the gas) shall pass horizontally through the lime water a sufficient distance to effect its purification, before it can rise to the chamber above as set forth, by which means I obviate much of the pressure heretofore encountered in lime water purifiers, and get a better yield, at a great saving of retorts, as stated.

RAILROAD RAILS—M. J. Waldron, of Dunkirk, N. Y. : I claim, first, Placing the ends of the rails in a suitably constructed chair between two ties, both of the ties being used as a bearing or supporting surface to the chair, substantially as described.

Second, I claim the bolt in the enlarged recess in the ends of the rails and the jaws or lapped part of the chairs as an arrangement of means for forming an elastic or spring joint for the ends of the rails, as set forth.

LOOMS—Joseph Welch, of Philadelphia, Pa. : I do not limit my claim to the described construction, arrangement, or mode of operating the lever, L, or its equivalent.

But I claim reducing the normal capacity of the pattern wheel or its equivalent, so as to make it perform the functions described, substantially in the manner and for the purpose set forth and described.

SLEEPING CARS FOR RAILROADS—Eli Wheeler, of Elmira, N. Y. : I claim, in connection with a pair of car seats, B B, b b, which are enclosed within a compartment, A a, and placed at the proper distance apart, pivoting by fixed pivots, m m, the backs, c c, of said pair of seats at such points on the arms of the seat frame, B B, b b, and in such relation to each other, that by turning the backs over in opposite directions, in the path of a vertical circle, they will both be brought and made to lie horizontally or on a level with the cushions of the seats within the space existing between the two seats, and upon a supporting cleat, F, and thus form a comfortable sleeping couch entirely enclosed within the compartment, substantially as and for the purposes set forth.

[This invention renders ordinary car seats capable of being converted into sleeping couches. The backs of the seats are so hinged that by simply turning them over in the path of a vertical circle, they will form a continuation of the bottom of each pair of seats and thus form a comfortable night couch. In connection with the lower couches thus formed, an arrangement of upper couches is provided above the seats, and thus all the passengers can be accommodated. This is a very simple and perfect arrangement, and is capable of being managed by the most unskillful traveler.]

SEWING MACHINES—Darius Wheeler and Luman Carpenter, of Oswego, N. Y. : We are aware of Blodget & Lerow's patent of Jan. 14, 1851, and do not intend to claim anything therein contained, and we are also familiar with the claims of E. Harry Smith, now under examination at the Patent Office, and make no claim to the broad principle claimed by him of a revolving looper, having a continuous rotary movement, and passing entirely through a loop of the needle thread.

But we claim the combination of the notched looper with the needle spring pins and cam plate, substantially as described, whereby one end of the looper takes the loop and the other end discharges it upon the needle, while the looper is moving continuously in a circle.

We also claim the form of the looper, substantially as set forth, whereby as the looper progresses through the loop, the loop by the combined action of the needle and looper becomes shorter than when first taken, and is removed entirely out of the path of the point of the looper at and after its discharge, so that it cannot be taken again by the looper.

METHOD OF REGISTERING THE MOTION OF MACHINERY.—S. Lloyd Wiegand, of Philadelphia, Pa. : I claim first, Reversing the motion of the zones or indicating dials by friction applied to them in the manner set forth.

Second, The arrangement of the spring, L, to act as a detent in reversing, in the manner described.

SEED PLANTERS—James D. Willoughby, of Carlisle, Pa. I claim the arrangement of the rollers, F F, placed horizontally with the slide, H, as constructed, for regulating the discharge of seed, and the frame, J, for keeping said roller in place, and preventing the lateral discharge of seed, as is fully set forth.

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STOVES—J. H. Wilkinson, of Concord, N. H.: I do not claim a ventilating stove or a stove for burning the gases by admitting oxygen.

What I claim is, first, The arrangement of pipe, K, within pipe, E, and damper, L, constructed and operating as and for the purpose described.

Second, I claim inserting the air chambers, J J, constructed as described, in the linings of the fire-pot, for the purpose set forth.

Third, I claim the holes, m m, in connection with the bed plate, O, provided with the arch piece, S, or their equivalents, for the purposes substantially as set forth.

MACHINE FOR MANUFACTURING SHOE PEGS—I. G. Worth, of Vassalboro', Maine: I do not claim the combination of a reciprocating knife, a fluted feeding roller and a mechanism for so operating both as to feed a peg block along with an intermittent motion, and cut pegs from it, as I am aware that such is the principle of the well-known Baldwin peg cutting machine.

But I claim an improved machine, consisting of a combination and arrangement essentially as specified, of a vibrating knife, or its equivalent, a bench or table, two fluted feed rollers and mechanism for imparting to such rollers intermittent feeding motions, in opposite directions, the same being productive of advantage in cutting blocks into pegs.

ELECTRO-MAGNETIC ENGINE—Frederick Yeiser, of Lexington, Ky.: I claim the employment of a series of balanced beams, F, with bars, G, arranged and combined with the magnets, C, frame, H, and rods, J, substantially as and for the purposes set forth.

[A notice of this improvement is given in another column.]

BUTTER WORKER—W. Bancroft (assignor to himself and H, M Proctor), of Burlington, Vt.: I claim the combination of the roller, P, with the roller, J, and share, O, substantially as and for the purposes shown and described.

I also claim the combination of double geared shell pinion, D, with the basin, A, adjustable shaft, H, socket, E I. and pinion, G, substantially as shown and described. so that by turning the screw, K, the shaft H may be raised or lowered, and the height of the roller, J, altered at pleasure.

[This invention consists in the employment or use of a rotating basin and corrugated adjustable roller, in connection with a share and guide roller. the whole being arranged to operate so that the butter may be thoroughly and expeditiously worked, and with great facility.]

MECHANICAL JACK—Amos Jones, (assignor to himself and S. M. Davis,) of Lebanon, N. H.: I claim constructing an improved jack, by combining a doubly toothed shank, with a suitable head-piece, A, when the teeth of said shank are arranged in such a manner as to furnish the necessary fulcrum and catches for the operating lever, C, in the performance of its appropriate functions, substantially as set forth.

MACHINE FOR MAKING BEEF AND OTHER STAKES TENDER—Thos. W. Moore, (assignor to Elliot & Moore,) of Plattsburg, N. Y.: I claim the combination of joint, g, lever, b, and the jaws, c and d, when the devices are so arranged that the jaws operate in relation to each other, substantially as and for the purpose specified.

CENTRIFUGAL GUN—C. B, Thayer, of Boston, Mass., assignor to himself and Charles Robinson, of Cambridgeport, Mass.: I claim the spiral groove, d, arranged substantially as specified.

In combination with the spiral groove, d, I also claim the space, g, and heel, h, at the extremity of each arm or aperture of the thrower, arranged and operating substantially in the manner and for the purpose set forth.

RE-ISSUES.

CONTINUOUS SHEET METAL LATHING SURFACE—John B. Cornell, of New York City. Dated May 13, 1856: I claim a closely united plaster, supporting metallic surface of substantially the shape described, when used in the construction of partitions, &c., which are designed to be fireproof and burglar proof.

OMNIBUS FARE BOX—I. S. Reeves, (assignor to J. B. Slawson), of New Orleans, La. Dated Feb. 23, 1858. I claim, first, The glass plates, i and f, as arranged in connection with the apron, m, in the manner substantially as and for the purposes set forth.

Second, Closing the passage to the drawer below from the chamber above by means of an apron operated by a spring, S, in the manner substantially as set forth.

REAPING MACHINES—C. H. McCormick, of Chicago, Ill. Dated Jan. 31, 1845: I claim the employment of the projecting ends of the reel ribs to effect the separation of the grain to be cut from that to be left standing in combination with a dividing apparatus, substantially as described. which effect a division of the grain to be cut from that to be left standing by forming an open space between the outer and inner grain for the ends of the ribs of the reel to act in, in which open space there is no reel post or other obstruction to prevent the free passage of the grain as it is brought back by the ends of the reel ribs to the platform of the machine, and by which means a separation of the inside grain to be cut from the outside grain to be left standing is made complete by the action and power of the reel, substantially as described.

REAPING MACHINES—C. H. McCormick, of Chicago, Ill. Dated Jan. 31, 1845: I claim the downward curve or bend, substantially as described, of the beams that support the cutting apparatus to facilitate the discharge of any clogging matter that may enter, as set forth.

DESIGNS.

CAN COVERS—John F. Bodine (assignor to himself and Wm. H. and J. Alfred Bodine). of Williamstown, N. J.

COOKING STOVES—R. Ham (assignor to Smith, Sheldon & Co.), of Troy, N. Y.

TOWEL STANDS—Nathaniel Waterman, of Boston, Mass.

Our Correspondence.

We have had many long letters on various subjects during the past week, and as we cannot insert them all in full, we will endeavor to give the pith of those which are likely to prove of interest to our readers. Two communications on dialling first meet our attention. G. W. Hildreth, of Lockport, N. Y., after having had a sundial for thirty-five years, and now possessing three, tells us that the one he considers preferable and best is constructed as follows:—The hour circle should be movable, and set by a scale, so that the dial will give true clock time. One of these scales he encloses to us; it contains the clock's variations for every day in the year, and is now pasted up in our editorial room. He also describes the manner in which he constructs his sundials, and we have no doubt he will give the same information to any of our readers who wants to make one, and he adds a postscript stating that charcoal has been used for burns in his neighborhood for more than twenty years.

Thomas Russell, of New York, suggests that dials are only accurate when they are graduated to the exact latitude in which they are placed, and the tables which are given in books are only to be used as examples, so that by them any one can make the necessary alterations in the graduation of their circles to suit the latitude in which they live. In our large country this is necessary, as the time varys much, being one hour and a quarter between this city and St. Paul, Minn.

James Bird, of Plankville, La., gives us in a pretty and simple essay (which is written so pleasantly that you almost think a bird sang, rather than wrote it, and which he says is his first attempt), the reason why one little puff of steam separates from the main body issuing from a steam engine, and commences whirling in the air. It is because that small puff has a greater affinity for the air than the rest. says our songster. Try again, James Bird.

Ira Parke, of Hudson, Wis., prevents the moths from attacking his bee hives by mounting them on legs a little crooked, and placing these on little blocks during the warm weather. He also informs us that he had two hives, in one of which the bees were in a fine healthy flourishing condition, and the other was deserted by all save the queen and two faithful attendants. By changing their places, he got the bees from the strong hive to go into the poor one, and so equalized the number of bees in each hive for the winter, as the experiment was tried in the fall.

Dr. Hill, of Galesbury, Ill., objects to some remarks made by us on saleratus, and very truly observes that cooks do not understand the laws of chemical combination, and consequently overdoes the bread with saleratus. They also use much sour milk, and have to put a large quantity of saleratus in to neutralize its effect, so that we do not have simply the tartarate of potash which is common to wine as well as bread, but the lactate of potash which produces indigestion, sick headache, and other ills. The difference between us and the foreign wine drinker is, that they drink an acid tartarate, and we eat an alkaline or neutral tartarate or lactate, so that they are the "sour" set, and we are not "sweet," but "alkaline." Far better would it be if all foreign substances, except salt, were left out of bread and biscuits.

The clerk of Tiger Engine Company, of Haverhill, Mass., requests us to publish the fact that these ferocious animals on July 19th played as follows:—Fifty men drew water through three lengths of suction pipe up a rise of fifteen feet, forced it through two hundred feet of hose and one inch nozzle, five feet over a flag staff 183 feet 7 inches high, or from the water 203 feet 7 inches. This was remarkably good playing, and does the Tiger b'hoys credit. The "machine" was built in 1851, by W. Jeffers, of Pawtucket, R. I.

Marking Ink for Linen.

Take nitrate of silver, eleven grains; rain or distilled water, eighty-five grains (say drops); gum arabic, twenty grains; carbonate of soda, twenty-two grains; liquor of ammonia, thirty grains. In mixing the ingredients, dissolve the gum in the water first, and then the soda—now dissolve the nitrate of silver in the liquor of ammonia. When the solutions are complete, mix the two fluids in a glass vessel, and boil them for a minute or so; when cold it is ready for use. A common oil flask is a capital vessel for the above purpose, provided the oil has been well cleaned out of it by means of strong soap and hot water. Though of glass, they may be placed on a clear fire, and water boiled in them without any fear of breaking. In marking linen with permanent inks, care should be taken that the fabric is perfectly dry, as this prevents the ink from running; and it is essential at all times to use only quill pens.

SEPTIMUS PIESSE.

Water Meters for Boilers.

In estimating the economy of any furnace, and the relative merits of various engines and boilers, sad mistakes are sometimes made, and the evaporator and consumer are mixed up in such a way that it becomes next to impossible to account for the steam which has been made. To remedy this, the *American Railway Times* suggests that a water meter be added to the boiler, and that the quantity of water which has gone into the boiler being thus accurately known, with little trouble and without any calculation, and the amount of steam consumed being measured by the indicator, the difference being known, would enable engineers to discover defects in their valvular arrangements of which they are now perfectly ignorant, and serve to show the working condition of the boiler. The indicator has done much for enabling the steam engine to be made more economical, and a water meter, simple, small and accurate, that could easily be applied to the feed pipe would be a valuable invention. This is certainly worth the attention of our inventors, and we would advise them to set their wits to work on the subject.

Rags.

The importation of rags for the purpose of papermaking is a great deal more extensive than most persons would imagine. During the year 1857 we imported 44,582,080 lbs., valued at $1,448,125, and making 69,461 bales; 35,591 bales were from Italy, and more than one-third are entirely linen, the rest being a mixture of linen and cotton. About 2,000 bales were also imported from the free cities of Hamburg and Bremen. France prohibits the exportation of rags, and so does Rome; the few which we get from Ancona (a Roman province) being by special permission on payment of large fees. Prussia and Germany generally impose so high an export duty on rags as to stop the trade entirely. The exports from Alexandria and Smyrna are chiefly collected in Asia Minor by agents having license from the government, and the domestic demand must be supplied before any can be exported. It is the same with Trieste, where only the surplus is allowed to come away. The Trieste rags are collected all over Hungary. We are informed that New York and Boston receive the largest quantity, and the place that ships the most is Leghorn in Italy.

Origin of the Stocking Frame.

In the Stocking Weaver's Hall, London, there is a portrait of a man in the act of pointing to a stocking frame, and addressing a woman who is knitting with needles. The picture bears the following inscription:—"In the year 1559, the ingenious William Lee, A.M., of St. John's College, Cambridge, devised this profitable art for making stockings."

A cotemporary gives an interesting elucidation of this inscription. It appears that when the art of knitting stockings was yet a new thing in England, the Rev. Mr. Lee fell in love with a young woman, to whom he paid his addresses; and it so happened that whenever Mr. Lee came to see her she was knitting a stocking, and so intent was she upon her occupation that she gave little heed to the sugary talk of her lover. His desire for a wife soon changed into a malevolent determination to spoil her knitting forever, by inventing a machine that would supersede stocking-making by hand. He visited the lady as sedulously as ever, but his purpose was to learn the mystery of knitting, that he might contrive to do similar work with iron fingers. He observed that his mistress made the web loop by loop, but the round shape she gave the stocking from the four needles greatly embarrassed him. Pondering this great mystery on one of his visits, he found her knitting the heel of a stocking, and using only two needles—one holding the loop, while the other formed a new series. The thought struck him that he could make a flat web, and round it by joining the selvages. After three years' hard study, Mr. Lee was enabled to make a course upon the frame, but the formation of the heel and foot embarrassed him greatly. Perseverance, however, conquered this difficulty at last, and his machine was finished. The fair knitter, whose shyness or coquetry resulted so strangely, endeavored to re-awaken M. Lee's passion for herself, but in vain. He had become so thoroughly engrossed by his invention that he had no sensibilities for anything else. He abandoned his curacy, shut his heart against affections, and wove stockings in his head from morning till night. The result was, that though he succeeded to the utmost in his invention, he died in Paris, in concealment, grief, and poverty. The same hall contains a portrait of Sir Richard Arkwright, whose stocking frame, considerably modified, is the one now generally in use.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims:—

ELECTRO-MAGNETIC ENGINE.—F. Yeiser, of Louisville, Ky., has invented a new engine, in which electro-magnetism is to be the motive power. The invention consists in a certain system of balanced beams or frames carrying soft iron bars at each end, to be operated upon alternately by two series of electro-magnets in such a manner as to receive an oscillating motion, and having combined with them mechanism, through which their oscillating motion is caused to produce the rotary motion of a shaft.

ADAPTING ELECTROTYPE PLATES TO CYLINDERS—The object of this invention is to print very rapidly from engraved electrotype or other plates. As the first step towards the accomplishment of this object, the inventor proposes to connect the surface of the plate to be printed from into a cylindrical form, that it may be made to rotate, and produce the impression on paper or other substance as the latter moves between it and another rotating surface. The first part of the invention consists in backing the plates with a flexible but inelastic, or very slightly elastic metal or alloy, and when thus backed winding them on the periphery of the printing cylinder by drawing and bending them between the latter and the periphery of the feeding and impression cylinder, so as to make them bear evenly and solidly upon every part of the printing cylinder, and securing them firmly thereto, by which means the plates are made, practically, as much a portion of the printing cylinder as though made of the solid metal of the cylinder. The inventor also applies what he calls a "clearing roller," in combination with the printing cylinder and the inking roller, to remove the superfluous ink from the surface of the plate after the inking cylinder has inked it. He also employs an endless band to clean and polish the surface of the plate between the engraved or sunk portions which produce the impression. The inventor of this valuable improvement is Frederick B. Nichols, of Morrisania, N. Y.

TUBES FOR CONVEYING SOUND.—The object of this invention is to collect an adequate volume of sound, and reflect the same through the tube in parallel lines of vibration, provision being made for properly reflecting the sound at the angles of the tube should any be required. This object being attained, sound may be transmitted through tubes much more audibly than by those of usual construction, as the lines of vibration are not, as heretofore, arrested in their progress and neuralized by reflection, in consequence of their zig-zag passage through the tube. It is the invention of R. G. Hatfield, architect, of this city.

EXCAVATOR.—This invention is designed for removing mud, sand, or gravel from within the holds of sunken vessels, and also any submerged articles desired to be raised. It consists in forcing a stream of water directly over the objects to be raised, or causing the stream to act at such spots that the sand will be washed away by the stream, and the article exposed and rendered accessible to submarine divers. Eli Brazelton, of St. Louis, Mo., is the inventor.

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New Inventions.

The Collins Company vs. Mr. Thomas.

The American Collins' Axe Co. have prosecuted Mr. Thomas, a Birmingham manufacturer, for fraudulently using their trade mark; and the Vice Chancellor, in giving the verdict in favor of the American Co., made the following highly creditable and liberal remarks: He said that nothing could justify the course of fraud which had been practiced in England against the plaintiffs. He, for one, felt deeply indebted to them (though, of course, they had only been advocating their own interests) for putting an end to this nefarious practice—a practice, he was glad to find, which was not subject to the jurisdiction of his court alone, but could also be reached criminally, and severely punished.

Brown's Patent Polychromatic Press.

We lately witnessed the operation of this simple and compact press, for printing three or more colors at one impression, and were highly pleased with the effective and beautiful manner in which the colors were combined upon cards. The respective parts for holding the lines of type which are to receive different colored inks, are so arranged and operated in relation to the respective inking rollers and their movements as to enable all the type, after being properly inked, to be combined and embraced in one form on a single platen, and the impression to be then obtained from the same. This distinct inking of the rollers and type and combination is effected in a very simple and self-acting manner, and by it any combination of colors, no matter what their peculiar arrangement may be, so that their parts can be held in distinct frames, can be imprinted. It is the invention of Stephen Brown, of Syracuse, N. Y., and was patented through the Scientific American Patent Agency on the 6th of January, 1855.

Improved Saw Bench.

This invention consists in hanging two or more circular saws (a cutting off and a splitting saw), in a swing frame, in such a manner that when it is desired to use the splitting saw it can be raised to project any required distance above the table, at the same time the cutting-off saw is below the table, out of the way. When it is desired to use the cutting-off saw, that is raised and adjusted as desired, the splitting saw at the same time falling below the table, out of the way.

The invention is fully illustrated in our engravings, Fig. 1 being a perspective view, with part of the table broken away, to show the arrangement of the parts.

A is a frame, surmounted by an elevated table, B. This table is made in two parts, B and B′, divided on a line with the saws. C is part of a swing frame that holds the saws and saw arbors, moving on a central axis, D. E E are the axles of the saws, G G′ carrying on their outer extremities the band wheels, H H′, between which is a loose pulley, I; and there is a cutter that can be placed on D for cutting tenons (not shown in our engraving), that can be made to rotate by the pulley, I. J is a rest for the table, which it supports, as well as giving strength to the swing frame, G. K is a segment wheel mounted on D, by which the saws, G and G′, are alternately raised or lowered; it is moved from the handle, N, by the endless screw, L, upon the arbor, M, of N.

O is a guide pivoted to bars, P, which are pivoted to the table by screws, *a*. By this means it is made capable of a parallel motion, and can be brought nearer to or removed further from the saws, according to the width of the stuff to be sawn. To P is secured a slotted quadrant, Q, having a screw and nut, R, passing through it, so that the guide or gage, O, can be firmly adjusted in any desired position. *b* is a projection above the axle of I, to which I can be secured when the saws are to be operated by a belt coming from above—as seen in Fig. 2—*h h i* being the axles of their several band wheels or pullies. When the saws are to be operated by a band coming from below the pullies, H H I, are arranged as shown in Figs. 1 and 3, S being the band. *c* is a guide, that moves on the half of the table, B′, in a groove, *f*, and it has another guide, *d*, upon it, for cross sawing.

When used for sawing, put a cutting-off saw on one arbor and a splitting saw on the other, then raise the saw it is desired to use above the table, by turning the crank, N, by which the saws may be adjusted to cut any required depth. Instead of saws, cutters may be used for grooving, sticking, planing, &c. When it is desired to cut double tenons, put any well-known cutters on the arbors, E E, instead of saws, also any suitable cutters on

WARDWELL'S SAW BENCH.

Fig. 1

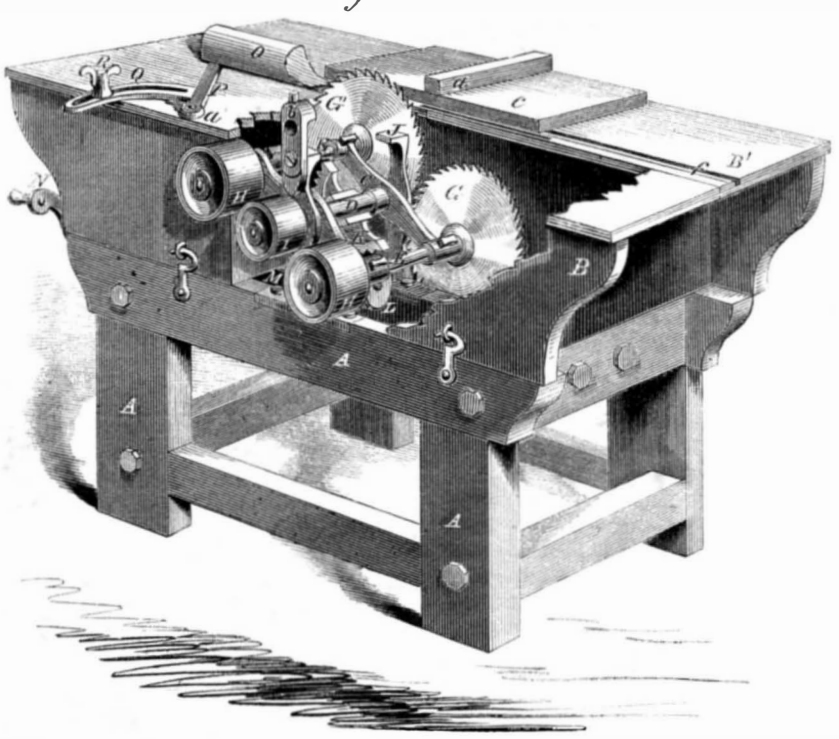


Fig. 2

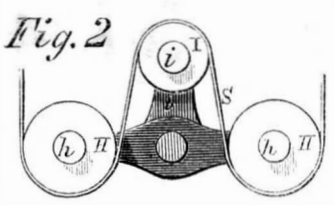
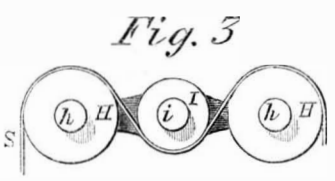


Fig. 3



the tenon arbor, for cutting the space between the tenons; then adjust the thickness of the tenons by cranks, N, and place any suitable table upon the frame, A. When it is desired to cut single tenons, two cutters are simply placed fast on the arbors, and the extra cutters omitted.

This manner of hanging saws allows one saw bench to answer every purpose of two separate ones. It also obviates the necessity of changing a splitting for a cutting-off saw, and *vice versa*, which is necessary where but one arbor is used in a saw bench, and it also possesses the great advantage of being used for tenoning with the trifling expense of cylinder cutters.

C. P. S. Wardwell, of Lake Village, N. H., is the inventor, and he will be happy to furnish any additional particulars. It was patented March 10, 1857.

BROWN'S QUILTING FRAME.

Fig. 1.

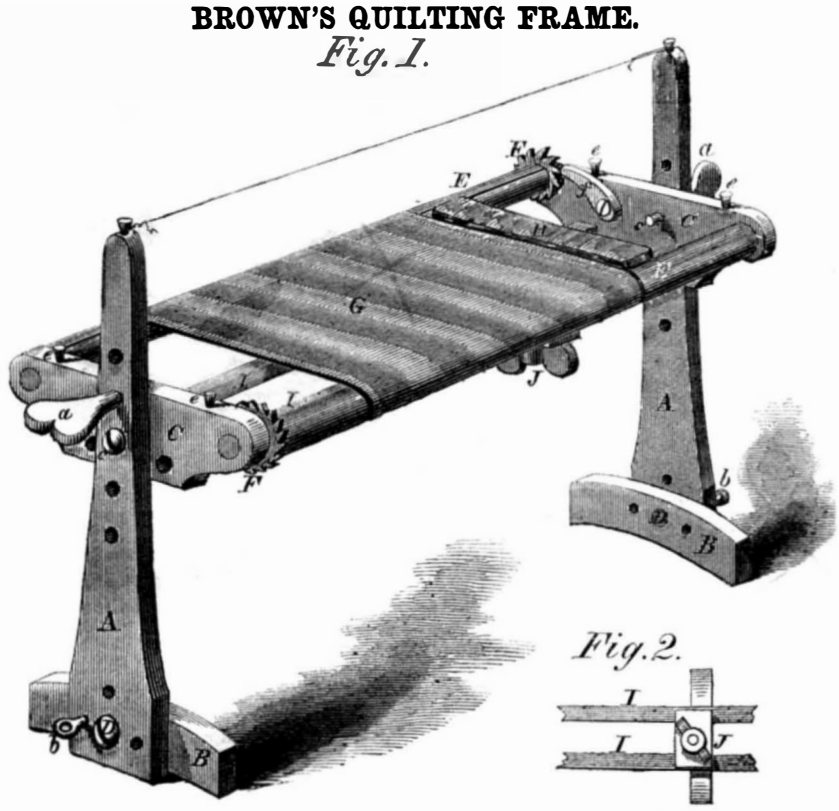


Fig. 2.

In the operation of quilting or embroidering on a large scale, a frame is required to hold the cloth or material that is to be worked upon quite tight, so that it shall not yield much from the accidental pressure of the hand while worklng. Such work is very tedious and tiring to the hand and arm, and consequently a rest is required on which the elbow or other portion of the arm can rest while the hand is over the cloth operating the needle. This quilting frame—the invention of Alanson Brown, of Rochester, N.Y.—provides in a convenient and portable form, all the desired requirements, as will be seen from the following description, reference being had to the accompanying illstrations, Fig. 1 being a perspective view.

A are two upright posts, to which are pivoted at D, cross pieces, B, that serve as feet to the frame. These cross pieces, B, are kept at right angles by pins, *b*, passing through holes in B and A, and these being withdrawn will allow B to be placed parallel with A, when it is packed up. C are two cross pieces pivoted to A by pivots, *c*, on which they are capable of turning to any angle, and they can be secured in their position by the pins, *a*. Between C two rollers, E, move, as in journals, and on each roller is a ratchet wheel, F, which is held by a pawl, *f*, secured to the cross piece, C.

The cloth or fabric, G, to be quilted is tacked or sewed to the rollers, and it can be brought off one roller on to the other, as the work progresses, and always kept properly tight. There are two bars, I I, that run from one cross piece, C, to the other, and on these the rest, H, can be secured in any position by the screw nut, J, seen in Fig. 2. The cord at the top serves to hold spools when quilting, or as an additional rail when the frame is used as a clothes' dryer, to which purpose it can be applied by removing the cloth, G.

It will be seen that the upper surfaces of B are curved, so that by turning these round they can be made to serve as rockers, and the frame converted into a cradle or small bed. Thus, if it is not wanted for one purpose it answers well for another, and forms, in a small space, a very convenient frame "to have about a house."

It was patented June 15th, 1858, and any further particulars can be obtained by addressing the inventor as above.

10,000 Sold to Agents.

About ten thousand copies of the Scientific American are regularly sold to local agents in various parts of the country. We should be glad to have this number greatly increased. One of our friends, writing from Worcester, Mass, informs us that he has induced several of the workmen in his shop to take the paper regularly from the news-agent. Will not all of our friends who receive the paper in this manner, urge some of their friends to do likewise? Thus they will increase the weekly edition of our paper, and also help the business of the "news-dealer," who, next to the parson and the doctor, is the most useful and entertaining man in the village.

How to Save Money.

For a club of ten subscribers we only require a remittance of $15, or $1 50 for each subscriber, for one year; for a club of twenty we only require $28, or $1 40 for each subscription, for a year. Certainly this difference is well worth saving. Now, will not our friends who receive the circular prospectus go about among their friends, and get them to join a club, and thus receive for one year fifty-two numbers of a journal which should be carefully read in every family? The useful receipts alone published in a single volume are worth ten times the subscription price for one year.

To the Postmasters of the United States.

Please to inform all the inventors in your town and vicinity, that the Editors of the Scientific American have issued an elaborate circular, giving instruction how to secure Letters Patent for new inventions, which they send free to all who may desire a copy. Their great experience for twelve years past in procuring patents enables them to give the best possible advice upon this subject.

The 30,000 plates which form the hull of the *Great Eastern* are bound together by 3,000,000 rivets! These bolts hold together the framework of a structure which would carry 10,000 troops to India, with 18,000 tuns of coal and cargo.

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Scientific American.

NEW YORK, AUGUST 14, 1858.

Our Anniversary.

Charles Mackay, during his late visit to the United States, discovered, among the many other wonderful things to be found here, that we possess a catalogue of "institutions" more numerous than he had met with among any other people. This term in former days could only signify some august establishment, either civil, political, or eleemosynary, but now it dignifies many an object of every day concern, and can as well apply to a match factory as to a Cambridge or Oxford university. Now, we modestly claim that the SCIENTIFIC AMERICAN is one of the recognized "institutions" of which the United States is said to be so prolific; why, therefore, should it not have its anniversary—its holiday?

Let patriots, great and small, prate loudly about independence—let orators talk about our great institutions, and say fine things of our great national bird—we have no word of opposition to say against these and kindred demonstrations. Our object now is simply to announce to the busy, thinking, earnest citizens of the great republic, from Arostook, Maine, to San Diego, California, that in the diurnal revolution of the earth the SCIENTIFIC AMERICAN is just about to slip out of its thireeenth year, and will enter upon its fourteenth volume on the 11th of September next, which is close upon our heels. The past year has been an eventful one—the financial and the business centres have been convulsed, and a heavy cloud of disappointment fell upon many bright hopes and cherished plans. The shock came upon us at an inopportune moment, just as we were about to enter upon a new volume, when more than six thousand book subscriptions were about to expire; and although we felt the effect of a diminished subscription list, yet our old and well-tried friends came forward, and did nobly towards extending the circulation of their favorite paper.

To one and all of our readers we tender our sincerest thanks, and we also appeal to them to not only promptly renew their own, but also to gather up additional subscriptions for the new volume. Shall we make this appeal to them in vain? We believe not; and if all our subscribers will turn out among their neighbors, and induce some of them to subscribe, instead of twenty-five thousand, we shall have a subscription list of at least fifty thousand.

We make this appeal the more urgently because, after careful consideration, we have determined not to continue the system of paying prizes, nor to begin the employment of traveling agents. We prefer to throw our cause upon those generous friends who have so long sustained the SCIENTIFIC AMERICAN, and we believe that we shall not be disappointed, after a continued success of thirteen years. We invite especial attention to the prospectus of the new volume, published in another column, and conclude by stating that it will be our endeavor to make the SCIENTIFIC AMERICAN still more useful and interesting than it has hitherto been.

To Cotemporary Editors.

We should be ungrateful not to acknowledge our great indebtedness to the editorial corps generally, for the many generous notices which have been given to the SCIENTIFIC AMERICAN since its commencement, and we hope it may continue to merit and receive their approbation. We have endeavored to keep to our original purpose, viz., to devote our time and talents to the development of the great industrial pursuits of the nation, and we shall in the new volume, as heretofore, remain firm to this purpose, eschewing political and religious controversies as subjects wholly foreign to our sphere of labor. We shall endeavor to render the SCIENTIFIC AMERICAN still worthy of the good opinion of our editorial brethren in all parts of the Union.

The Atlantic Cable Laid!

All hail to Anglo-Saxon genius! and two nations' heartfelt thanks to the noble, aye, and mighty, men of science, capital, and energy, whose untiring zeal and indomitable perseverance have linked the hemispheres with the electric cord! The cable, that has been the subject of so many hopes and fears, the enterprise that has received so much commendation and discouragement, now ceases to agitate with differing storms the public mind; and all, with one accord, and with harmonious voice, in joy and gratitude, feel glad that, reposing on old Ocean's bed, it has become a bond of peace between the nations, and that success has at last crowned the united efforts of America and England to bring about a triumph of science unequaled in the history of the age. On the afternoon of the 5th our land was electrified with the glorious intelligence; and smiles, congratulations, and warm expressions of good will, were heard and seen on every side. At Andover Theological College about one thousand persons were partaking of the Alumni's semi-centennial dinner, when the news was announced; then followed enthusiastic applause, and from that crowd of men of genius, learning and position, there burst forth, to the solemn tones of the "Old Hundred,"

"Praise God, from whom all blessings flow."

The right reception for such glorious news! Hearts were too full to speak, and many a silent sigh of thankfulness ascended to Him who had given the genius, and sustained by daily help, the men whose toil and energy have secured this grand result.

Originated at a time when all seemed prosperous and fair, then carried on through a season of such commercial depression as, we are thankful to say, is seldom seen; when cavillers and objectors on every hand—from the press and forum—all alike spoke discouragingly of the enterprise; yet after three failures, through all these difficulties, these noble men have toiled and thought, devised and carried out, and at last, when least expected, their perseverance is rewarded, and the world agreeably disappointed, by success! Only three weeks ago we announced the failure number three, but we did not groan and lament; we knew that the credit of men of science was at stake, the reputation of two navies was concerned; they had to effect a victory greater than ever was obtained in any battle, and our motto was in Gerald Massey's simple words—

"Hope on, hope ever."

Words almost loose their power, and fancy becomes weak, when we imagine the great results that will follow in the wake of this great event—Christianity and liberty both made more secure, new avenues of commerce opened, and no time given for rankling feelings to possess the minds of either people towards each other, for difficulties will be explained in a few hours; and in this regard, Cyrus W. Field, Professor Morse, and all connected with the enterprise, are great pacificators, great civilizers, and ever after shall be enrolled among the world's great men. We have not the inclination now to expatiate on the triumphs of science over natural difficulties, but we cannot help confessing that we are struck with wonder and an honest pride, when we reflect that British and American science, skill, and application have made three thousand miles of no importance, and have conquered Space and mastered Time.

The Economy of Nature.

In the great universe, to whatever part of it we turn, one controlling principle is ever apparent, one sentiment seems to pervade the whole—economy; and so forcibly does this strike the attention of every one of us, that we have expressed it in a proverb and use it as a motto, "Waste not, want not." The flowers are ever ready to receive the dew-drops, and when they have done with them, the morning sun evaporates and keeps them in the clouds ready for use again. Matter is indestructible, and although we can by fire and other means render it invisible, what is our surprise to find that it has assumed a gaseous form, and the piece of charcoal that we burned is now floating in the room mixed with the atmosphere we are breathing. Matter is ever changing. The forces of nature which we call chemical action, gravity, electricity, light, heat, and life are unceasingly effecting the transmutation of substances; thus, for example, ages long since rolled away, myriads of little creatures with shells not larger than a pin's head, acted as the scavengers of the ocean, they died, and sunk to the bottom of the deep, and to-day we find their shells as chalk and limestone all over the world, and naturalists tell us that on the sea bottom of the Gulf of Mexico, and in various parts of the Gulf Stream, there are limestone beds being formed by the modern representatives of ancient *Foraminifera*.

The lovely tints that deck the leaves in the Fall, and give to our autumnal scenery such a distinctive beauty, is due to some bed of iron ore, which has lain hidden beneath the rocks for centuries. Some little brook first found it out, and carrying it away bit by bit has spread it over the soil, gradually the iron ore crumbles, and the winds disperse it, the trees feed upon it, and in the autumn it shows that it is there, by the color of the leaves. When trees shall have decayed, and what is now dry land shall have been depressed and upheaved, covered by the sea and scorched by the sun, who knows but that that same iron may form a nodule or ball in a bed of coal, and be worked and smelted for the use of man. All these changes work together harmoniously. All goes on in exact proportions. No waste, no want!

"What is one man's meat is another's poison" is another maxim which the economy of nature teaches, and one simple illustration will quickly make it plain. The solid portion of living things, if we except the skeleton, is carbon—charcoal. This all animals must have in their food, and from the food the digestive organs take as much as is necessary to make muscle, flesh and tissue, throwing the rest away from the lungs as an invisible gas, poisonous and deadly. When we for a moment think of the number of beings who are every moment breathing into the common atmosphere such vast quantities of this gas, and have been doing it for centuries, we ask, "How is it, then, that we can live?" In the quiet and still night when men and animals sleep, the plants are greedily and eagerly absorbing all this carbonic acid, and with care taking every particle of carbon for their own nourishment, they throw off as useless that which is most necessary to the support of animal life—oxygen. So the proverb is illustrated, for what is the poison of the animal is the food of the plant.

In this way, lessons may be learned by studying the workings of the natural forces, and by imitating the economy of nature, we shall ever be healthy, happy and content.

Unhealthy Positions of the Body.

Those persons engaged in occupations requiring the hands alone to move, while the lower limbs remain motionless, should bear in mind that without constantly raising the frame to an erect position, and giving a slight exercise to all parts of the body, such a practice will tend to destroy their health. They should, moreover, sit in as erect a position as possible. With seamstresses there is always more or less stooping of the head and shoulders, tending to retard circulation, respiration, and digestion, and produce curvature of the spine. The head should be thrown back, to give the lungs full play. The frequent long-drawn breath of the seamstress evinces the cramping and confinement of the lungs. Health cannot be expected without free respiration. The life-giving element is in the atmosphere, and without it in proportionate abundance must disease intervene. Strength and robustness must come from exercise. Confined attitudes are in violation of correct theories of healthy physical development and the instincts of nature. Those accustomed to sit writing for hours, day after day, can form some idea of the exhausting nature of the toilsome and ill-paid labor of the poor seamstress.

Durability of Pearls.

The city of Paris, like our own national capitol, contains a large number of literary charlatans, whose existence depends upon the marvelous stories they are able to serve up for the journals for which they correspond, and hence these Bohemians of the press do not hesitate to manufacture the most improbable *canards*, to give spice to their correspondence, and gratify the prevalent appetite for the extraordinary. Royalty appears to receive the special attention of these gentlemen, and the most trifling event of interest pertaining to the courts of Europe is embellished and magnified through their exuberant fancies in such a degree as to make it extremely palatable to those for whom they cater. In detailing the many discoveries and inventions in science and the mechanic arts for which the French people are noted, they often mar and render them ridiculous to those of their readers whose education enables them to detect the proclivities of their trade; but it is seldom that one of these correspondents entrenches so far upon acknowledged principles in science as to manufacture and start a story involving a scientific solution. One, however, has had the temerity to do so in the following:—

TROUBLE IN A JEWEL CASKET.—An alarm of a most serious nature was spread throughout the Tuileries on Monday. The Empress having expressed her intention of wearing the beautiful parure of pearls at the ball given in honor of the Queen of Holland, it was discovered on opening the *ecrin* which contains the necklace, that two of the precious gems were discolored, and sickening of that disease, the terror of jewelers and guardians of crown jewels, the cure for, or preventive of which have yet to be discovered. By this disease the pearls change color, then become scaly, and finally crumble to powder. The malady is contagious; and if the first pearl attacked be not removed, every one confined in the same *ecrin* will soon be lost. In the present case, the separation of four of the diseased pearls from the necklace was speedily resolved upon by Kramer, the court jeweler, as the only means of saving the rest.—*Paris letter.*

We need hardly inform our readers that the above statement, beyond the assertion of discoloration, although studiously clothed in the positive language and precision of truth, cannot, from the nature of pearls, have any foundation whatever in fact. The exact formation of pearls has given occasion to any number of theories, including the poetical hypothesis of Pliny, that they are the result of the dew of heaven, imbibed by the shell oyster, which, like a liquid pearl, insinuates itself into the body of the same, fixes by its salts, and there assumes the color, hardness, and form of pearl; and many others of an equally absurd and extravagant character. Sufficient, however, is known of pearls to know that they are calcareous, and are all liable to change with wearing, and that in many cases they become of little value in a hundred years, especially the white ones, which often turn yellow and spoil in fifty years' time. Pliny tells us that Cleopatra was able to gain a wager from her lover, by dissolving her pearls in vinegar; but it is clear that she must have employed stronger vinegar than that at present used, as the hardness and natural enamel of a sound pearl cannot be easily dissolved by a weak acid. The pearls of the Empress may, therefore, have become discolored from age, or the action of an acid, or like cause; but the story that this was occasioned by a contagious disease as asserted, is evidently the result of intellectual friction, in connection with a well-known fact, in the inventive brain of some Paris correspondent, domiciled in the street of the Four Winds of the *Quartier Latin.*

An engraving and description of **Hock's gas** apparatus is unavoidably postponed.

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Trial of Breech-loading Arms.

It will be recollected by most of our readers that Congress, at the last session, made an appropriation of $25,000 for the purpose of altering the government muzzle-loading firearms to breech-loading, and authorized a trial to be made of all breech-loading arms susceptible of adaptation to this change, whose owners were willing to compete, with a view of ascertaining their relative merits. The Board of Ordnance officers, consisting of Col. Ripley, Captain Maynadier, and Major Ramsay, detailed by the Secretary of War to examine and report on such plans as might be submitted by inventors, have lately concluded their examination, and it is presumed will soon furnish their report to the Secretary. The programme of the recent trial, which took place at West Point, was as follows: 20 rounds for accuracy, at 100 yards; 80 rounds more, to make 100, for endurance; 20 rounds for rapidity; 20 rounds for accuracy at 600 yards; 3 rounds for penetration.

The competing guns, named in the order in which they were filed before the Board, were Morse's, Joslyn's, Mt. Storm's, Merrill's, Maynard's, and Sharp's; and all of them had been altered from muzzle to breech-loading, Storm's having been altered from an old U. S. rifle, and although, in consequence, somewhat rough in appearance, elicited marked evidences of approval from the general ease and facility with which it was handled throughout the trial. The following is the tabular statement, as prepared by the correspondent of the New York *Times*, the guns being placed in the order of their apparent superiority in each branch of the trial:

TWENTY ROUNDS FOR ACCURACY, AT ONE HUNDRED YARDS.

Mt. Storm	1	Morse	4
Joslyn	2	Maynard	5
Sharp	3	Merrill	6

FOR ENDURANCE—ONE HUNDRED ROUNDS.

All the guns stood the test in this respect, but Sharp's evidently worked hard, and Morse had twenty-eight miss-fires.

RAPIDITY—TWENTY ROUNDS.

	M.	S.		M.	S.
1. Mt. Storm	2	10	4. Joslyn	2	55
2. Merrill	2	25	5. Morse	3	40
3. Sharp	2	45	6. Maynard	4	15

TWENTY ROUNDS FOR ACCURACY—SIX HUNDRED YARDS.

	Balls in target.		Balls in target.
1. Mt. Storm	11	4. Joslyn	5
2. Sharp	7	5. Maynard	3
3. Morse	7	6. Merrill	3

PENETRATION—INCH BOARDS, INCH APART, THIRTY YARDS.

Mt. Storm	1	Joslyn	4
Morse	2	Sharp	5
Merrill	3	Maynard	6

This result being estimated by allowing for different weight of powder and ball, and not merely for the number of inches passed through, which were in the order of firing first named, to wit:

THREE ROUNDS EACH.

	Weight of ball. grains.	Weight of p'der. grains.	Rounds. 1	2	3	Total. inches.
Morse	744	70	12⅜	12¾	13⅛	37⅞
Joslyn	550	60	12⅛	11	9	32⅛
Mt. Storm	500	60	12	11⅛	11¼	34⅛
Merrill	744	70	13¼	13⅜	13½	39¾
Maynard	744	70	11¾	11⅝	11⅝	33⅞
Sharp	550	70	10¾	11⅝	10	31¾

After these results were obtained, Storm proposed that all the guns should be immersed in water for a stated period, and afterwards tried, to see what effect this exposure, to which they are likely to be subjected to in p ctice, would have, but this was objected to. He also proposed that they should be thrown against rocks, or down precipices, to further test their powers of endurance, but all refused compliance to this course, except Sharp. Four of the guns tried were loaded with the usual cartridge, and Mt. Storm's had the additional advantage of capability of being loaded with loose powder and ball.

Cast Steel for Ordnance.

Charles Sanderson, in a paper recently read before the British Society of Arts upon the subject of Iron, remarks that much has been advanced in favor of the manufacture of ordnance from cast steel, but he does not think that good and serviceable pieces of artillery can be manufactured from such metal. There is no great practical difficulty in casting a mass of steel two or even three tuns weight, but the irregular crystallization of so large a body of steel, melted in parcels of fifty pounds in a crucible is unfavorable to that uniform molecular structure which such castings should possess, since upon their excellence often depends the issue of a siege or action. Although wrought iron ordnance cannot be depended upon, they are better than cast steel, but their perfection is much impaired by the necessity of piling masses of iron together. He admits that a weld can be perfectly made, but two surfaces when oxydized can never become one amalgamated body, without the oxygen be reduced at the moment when the union is effected. Wrought iron guns have given excellent results when fired at slow intervals, but if a continuous quick firing were kept up, he doubts their being able to withstand the shocks; they would, he thinks, after each round become gradually weaker through the welded surfaces.

Steel Ships.

The superior lightness, durability, and elasticity of steel over iron renders it more suitable for many of the uses to which we put that metal, and one of the last substitutions that has been made is the construction of ships of steel. It is a well-known fact that within certain limits crank ships sail better than steady ones, because of their superior elasticity, and they give to the impact of the waves, and glide through the opposing forces, when a steadier and safer ship would inflexibly receive the whole force, and not move an inch. This fact having been considered, the homogeneous metal, which is a sort of half-way house between steel and iron, is being largely employed in ship-building, and there are now in England many in the course of construction. The first vessel ever built of steel was the small steam launch for the Livingston Expedition up the Zambesi river, and another one, the *Rainbow* of 160 tuns has just been launched from Mr. Laird's works on the Mersey, which is intended for the navigation of the Niger.

The Successful Laying of the Atlantic Telegraph Cable.

On the afternoon of the 5th inst. the Associated Press of this city received a telegram from Cyrus W. Field, informing them of the above startling and pleasant fact. It was as follows:—

"TRINITY BAY, August 5, 1858.

"TO THE ASSOCIATED PRESS.—The Atlantic telegraph fleet sailed from Queenstown on Saturday, July 17th; met at mid-ocean on Wednesday, the 28th, and made the splice at 1 P. M. on Thursday, the 29th, and then separated—the *Agamemnon* and *Valorous* bound to Valentia, Ireland, and the *Niagara* and *Gorgon* for this place, where they arrived yesterday, and this morning the end of the cable will be landed.

It is sixteen hundred and ninety-eight nautical, or nineteen hundred and fifty statute miles from the telegraph house at the head of Valentia harbor to the telegraph house, Bay of Bull's Arm, Trinity Bay; and for more than two-thirds of this distance the water is over two miles in depth.

The cable has been paid out from the *Agamemnon* at about the same speed as from the *Niagara*.

The electrical signals sent and received through the whole cable are perfect.

The machinery for paying out the cable worked in the most satisfactory manner, and was not stopped for a single moment from the time the splice was made until we arrived here.

Captain Hudson, Messrs. Everett and Woodhouse, the engineers, the electricians, and officers of the ships, and, in fact, every man on board the telegraph fleet, has exerted himself to the utmost to make the expedition successful, and by the blessing of Divine Providence it has succeeded.

After the end of the cable is landed and connected with the land line of telegraph, and the *Niagara* has discharged some cargo belonging to the Telegraph Company, she will go to St. John's for coal, and then proceed at once to New York.

CYRUS W. FIELD."

The next day he telegraphed the President, the Mayor of New York, and other officials, all of whom sent corresponding answers of congratulation. The telegram of Captain Hudson, of the *Niagara*, to his family is good. Here it is:—

"TRINITY BAY, August 5, 1858.

"God has been with us. The telegraph is laid without accident, and to Him be all the the glory. We are all well.

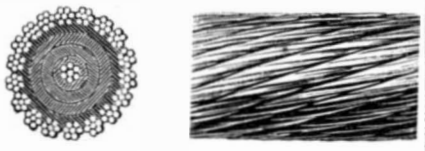
Yours, affectionately,

WM. L. HUDSON."

There is now no doubt that both ends have been successfully laid, but owing to the vessels having no instruments for transmitting messages on board, it may be several days before the Queen's message to the President can be sent through.

Up to the hour of our going to press there was no further news, as the land line on Newfoundland had stopped working from some unforeseen cause, which, however, was quickly being repaired.

As many of our readers may not remember the illustration we published on page 216, Vol. XII., we now give another engraving of



a section and side view of the cable which stretches from Valentia Bay, Ireland, to Trinity Bay, Newfoundland, of the *actual* size, and another showing the method of its construction.

1. Wire.—Eighteen strands of seven inch wire.
2. Six strands of yarn.
3. Gutta percha.—Three coats.

Telegraph wires.—Seven in number.

The flexibility of this cable is so great that it is as manageable as a small rope, and it is capable of being tied around the arm without injury. Its weight is but 1,860 pounds to the mile, and its strength such that it will bear in water over six miles of its own length if suspended vertically. Some doubts being entertained as to its sinking to the bottom, it is enough to know that it is heavier than those shells which have been taken up from the bed of the ocean by Commander Berryman while engaged in sounding along the line of the telegraphic plateau.

Thus the great work of the nineteenth century is accomplished, and hourly it nears a perfect completion; and ere this paper gets into the hands of many of our readers, we expect that the Royal Message and Presidential reply will be in every one's mouth throughout Britain and America.

The Climate of Fraser River.

This new district, to which all classes are now turning their attention, posseses a mild and genial climate, and a fertile soil awaits the labor of the agriculturist. All our upper Pacific coast has a range of temperature something like the west of England, though somewhat hotter in summer. The gold excitement will turn the world's attention to this land as a field of emigration, and will do much for developing the resources of what may prove to be one of the richest portions of the continent.

FRUIT AND VEGETABLES.—At the present time New York market is well supplied with apples, peaches, plums, blackberries, watermelons, tomatoes, and green corn. Consequent upon the abundance of all these luxuries, the usual mortality among children prevails, otherwise our city is healthy.

PONDEROUS MACHINERY TO GO ABROAD.—The Novelty Iron Works have finished a lathe, to fill the order of a foreign government. Its weight is over 140,000 pounds, or about sixty tons.

GRAY HAIR.—Some English writer has recently asserted that an undue proportion of lime in the system is the cause of premature gray hair, and advises to avoid hard water, either for drinking pure, or when converted into tea, coffee, or soup, because hard water is always strongly impregnated with lime. You may soften water by boiling it. Let it become cold, and then use it as a beverage.

VALUABLE PAPER MONEY.—Judging from the following notice of a Minnesota Bank, the money in that State must be below par: "It may be proper to add, that a bushel of notes are traded for an iron spoon at the place issued, and gradually lose their value while traveling to remote sections of the country."

THE AMERICAN INSTITUTE FAIR will be held at the Crystal Palace, as usual, this year, and will commence on the 15th of September next. The managers are making every exertion and sparing no expense to make the coming fair as fine an exhibition of American skill and invention as we have ever had in this country. Inventors from the country who wish to compete for the prizes had better begin making their preparations at once.

LIGHT.—The celebrated *savant* Niewentyl, is said to have undertaken to count the number of particles of light that escape from a burning candle. By his computation, there are thus evolved at every second of time, "ten millions of millions times more than the number of grains of sand computed to be contained in the whole earth." If any mathematician can make a more nice and accurate calculation, it will be best for him to begin pretty soon.

AN EXCELLENT WHITEWASH for ceilings of walls can be made of Paris white, 33 pounds, costing $1, and Cooper's white glue, 1 pound, costing 50 cents. Put the glue to soak in cold water over night; in the morning slowly heat until dissolved in the water. Stir Paris white into a small quantity of hot water. Then mix both, and add hot water to reduce to a proper milky consistency, and apply with a brush. It is probably better to keep the liquid warm over a fire, or by the occasional addition of hot water. A single coat of this is described as being equal to a double coat of lime whitewash, while it is far more brilliant and pure, and will not rub off.

THE EFFECTS OF TOBACCO.—The Dublin *Medical Press* asserts that the pupils of the Polytechnic School in Paris have recently furnished some curious statistics bearing on tobacco. Dividing the young gentlemen of that college into two groups—the smokers and non-smokers—it shows that the smokers have proved themselves in the various competitive examinations far inferior to the others. Not only in the examinations on entering the school are the smokers in a lower rank, but in the various ordeals that they have to pass through in a year the average rank of the smokers had constantly fallen, and not inconsiderably, while the men who did not smoke enjoyed a cerebral atmosphere of the clearest kind.

A NEW SLEEPING CAR.—The Great Western Railroad of Canada are engaged in building an experimental sleeping car, to combine the two desideratums necessary to insure comfort in day and night travel. We have not heard the nature of the plan upon which this car is constructed. But in connection with this fact we may mention that since the publication of our article on the subject of sleeping cars we have had fifty different plans of seats, designed to embrace the objects desired, presented for inspection, and have applied and secured patents for a large number of them. We shall in a few weeks present to our readers an engraving and full description of Woodruff's patent seat and couch car, in the form in which it is now being constructed for many of the western railroad companies.

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Correspondents

☞ From the success of the Atlantic Cable, correspondents will at once see the propriety of our omitting their articles on the subject of its failure.

H. J. R., of Va.—Very fine impressions of ferns may be obtained by thoroughly saturating them in common porter, and laying them flat between white sheets of paper without much pressure, and letting them dry out.

J. G., of Del.—Revolving sails have often been suggested as a means for propelling and guiding balloons. We have no confidence in the success of any such scheme.

M. G., of Ohio.—The exclusive claim which your employer sets up to an invention made by you, because you happened then to work for him, reminds us of a New Zealand chief, who maintained that he had a good title to his land because he had eaten the former owner. The claim of your employer will not avail, unless by special contract you made the invention for him. You had better proceed at once to apply for the patent. Inventors many times lose the full benefit of their improvements by unnecessary delays.

C. L. McGrew, Lexington, Mo., wishes to purchase an engine pump capable of drawing water about thirty feet through a two and a-half inch pipe, and thence forcing it to the top of a three or four-story building, to be used as a fire-extinguisher.

C. C., of Conn.—The amount of force exerted by one pound of gunpowder is 221,240 pounds raised one foot high.

W. H. S., of Phila.—Orfila's celebrated hair dye is said to be simply carbonate of lime, made by boiling, for an hour and a quarter, four parts of sulphate of lime with five parts of slaked lime, in thirty parts of water. Filter the liquor and collect the powder, which, if applied in a warm solution, will dye the hair a fine black in one hour.

S. O., of Conn.—The best method that we can recommend you to adopt for protecting your shingles is to kyanize them, or give them a coat of red lead and boiled oil before using.

J. S. R., of Ill.—The bait used by English and other rat-catchers to tempt the wily animals into their wire prisons, is the oil of rhodium, for which rats have as great a partiality as cats have for their peculiar "nip."

B. S., of Md.—The breaking strain given in an item on wire rope, a few weeks ago, was the amount to each square inch. The British government require that all wrought iron furnished to them shall sustain the weight of ten tuns to the sectional square inch.

J. Q., of ——.—Your suggestions concerning the Atlantic Cable are old, and have been decided to be useless.

M. A. S., of Ill.—The best method of constructing an ice house is to build its walls entirely underground, with a foot space outside for rice, chaff, charcoal, sawdust, or other good non-conducting material. The covering, and other parts above ground, should also be made double, and filled in with the same non-conducting substance.

W. K., of Ill.—The employment of ambrotypes, or pictures taken on glass, for magic lantern purposes, in the manner you indicate, has been done before, and is not therefore patentable.

W. H. R., of Va.—Railroad station indicators made as you propose, to wit, the names of the stations painted on an endless belt moved by a crank, are quite old. Your device is not patentable.

A. M., of Iowa.—By covering common bricks with common salt, and heating them until the whole surface is glazed, they will be protected from the action of the weather, and have a hard, durable, and vitreous coating.

J. M. A., of R. I.—Your engine is what is variously known as "Hornblower's engine," and "Wolff's engine," and was invented by Hornblower nearly eighty years ago. Such engines, with cylinders side by side, are now, or were, many years ago, in use on some English steamers. But this method of using steam is not so good as using it with a high degree of expansion in a single cylinder.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, August 7, 1858 :—

J. H. C., of N. Y., $100; W. C., of N. J., $30; W. A. M., of Minn., $27; W. D., of Texas, $25; W. D., of N. J., $25; J. A. McC., of N. Y., $25; J. P. B., of N. Y., $30; R. H. E., of Ill., $35; W. M. S., of N. Y., $25; A. W. H., of Conn., $25; J. W. M., of Pa., $35; J. L., of Mass., $35; G. C., of Ky., $30; J. C. F., of Texas, $35; W. W. H., of Texas, $30; H. H., of Ind., $30; J. M. B., of ——, $30; J. A., Jr., of Mass., $30; O. H. S. B., of Ind., $27; M. & W., of Ill., $25; T. E. McN., of Pa., $55; W. H. T., of Mass., $30; B. O., of Ohio, $27; E. M. B., of Wis., $55; A. P., of Tenn., $25; E. D., of Md., $250; W. G. S., of Ill., $30; A. S. M., of S. C., $55; J. P. E., of Pa., $35; A. F. T., of Mass., $55; G. & D., of Texas, $30; A. S., of Pa., $30; A. S. S., of Ohio, $25; W. G. B., of Ill., $30; I. M. M., of Ind., $30; B. P. B., of Pa., $35; B. & H., of Mass., $32; J. W. N., of Conn., $32; T. W. B., of N. Y., $100; T. H., of Ohio, $30; J. A., of S. C., $5; A. H., of N. Y., $30; K. F., of Wis., $25; M. A. W., of Ohio, $15; J. K., of N. Y., $25; J. R., of Mass., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, August 7, 1858 :—

O. H. S. B., of Ind. : C. P. G., of Ill. ; J. C. F., of Ohio ; A. P., of Tenn. ; J. K., of N. Y. ; K. F., of Wis. ; J. C. F., of Texas ; J. H., of N. Y. ; B. P. B., of Pa. ; T. H., of Ohio ; A. W. H., of Conn. ; J. M., of Iowa ; J. L., of Mass. ; W. D., of N. J. ; B. O., of Ohio ; J. A., of S. C. ; M. A. W. of Ohio ; W. A. M., of Minn.

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THE RAPID GROWTH OF OUR PATENT Agency business during the past three years has required a great addition to our ordinary facilities for its performance, and we are now able to announce the completion of a system which cannot fail to arrest the attention of all who have business of this kind to transact.

OUR PRINCIPAL OFFICE

will be, as usual, at No. 128 Fulton street, New York. There is no other city in the Union so easy of access from every quarter as this, consequently there are greater advantages in regard to the transmission of models, funds, &c., through the various channels that center in New York. Two of the partners of our firm reside here, and during the hours of business are always at hand to counsel and advise with inventors. They are assisted by a corps of skillful Examiners, who have had many years of active experience in the preparation of cases for the Patent Office.

To render our Patent Agency Department complete in every respect, we established over a year ago a

BRANCH OFFICE IN THE CITY OF WASHINGTON,

on the corner of F and Seventh streets, opposite the United States Patent Office. This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it. Inventors and others who may visit Washington, having business at the Patent Office, are cordially invited to call at our office.

A SPECIAL NOTICE.

We especially require that all letters, models and remittances should be made to our address at New York.

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We have been accustomed from the commencement of our business—thirteen years since—to examine sketches and descriptions, and give advice in regard to the novelty of new inventions, *without charge*. We also furnish a printed circular of information to all who may wish it, giving instructions as to the proper method which should be adopted in making applications. This practice we shall still continue, and it is our purpose at all times to give such advice free and candidly to all who apply to us. *In no case will we advise an inventor to make application unless we have confidence in his success before the Patent Office.*

Our extensive experience in mechanical and chemical improvements enables us to decide adversely to nearly one half of the cases presented to us for our opinion, before any expense has occurred in the preparation of the case for a patent.

When doubt exists in regard to the novelty of an invention, we advise in such cases a

PRELIMINARY EXAMINATION

to be made at the Patent Office. We are prepared to conduct such examinations at the Patent Office through our "Branch Agency," upon being furnished with a sketch and description of the improvement. Our fee for this service will be $5.

After sufficient experience under this system, we confidently recommend it as a safe precautionary step in all cases before application is made for a patent—not that there will be no rejections under this system. It is impossible to avoid such results in many cases, owing to the exceedingly wide range taken by the Examiners in the examination of cases; but, nevertheless, many applicants will be saved the expense of an application by adopting this course. Applicants who expect answers by mail must enclose stamps to pay return postage.

THE COSTS ATTENDING AN APPLICATION

for a patent through our agency are very moderate, and great care is exercised in the preparation of specifications, drawings, &c. No cases are lost for want of particular care on our part in drawing up the papers, and if the claims are rejected, we enter upon a speedy examination of the reasons assigned by the Commissioner of Patents for the refusal, and make a report to our clients as to the prospects of success by further prosecution.

A circular containing fuller information respecting the method of applying for patents can be had gratis at either of our offices.

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All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, enclosing the official letters, &c.

FOREIGN PATENTS.

We are very extensively engaged in the preparation and securing of patents in the various European countries. For the transaction of this business we have offices at Nos. 66 Chancery Lane, London; 29 Boulevard St Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we may safely say that three-fourths of all the European patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of patents to inventors. Any one can take out a patent there.

Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, &c., may be had gratis upon application at the principal office or either of the branches.

Communications and remittances should be addressed to

MUNN & COMPANY,
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The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents :—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON.

WESTWARD HO !—HAVING RESIDED West for twelve years, I have formed a catalogue of suggested improvements in agriculture, mechanics, and housewifery, much called for, and yet unsupplied. Hints thus given are often the bases of grand results. I will take an interest in any good invention which my list suggests. Copies sent by return mail for twenty-five cents, either in stamps or money Address, J. HERVA JONES, Rockton, Winnebago co., Ill.

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CROSSETT'S PATENT STAVE CUTTER—Patented July 1, 1844; re-issued March 2, 1858; renewed and extended June 26, 1858. The above mentioned machine is warranted to cut more and better staves than any other machine in the United States, and is the most simple, cheap, and durable. I hereby caution all persons against using and vending said machine (the main features of which consist in the stationary knife and vibratory bed-piece) without the legal right to do so. Offenders will be dealt with according to law. All persons wishing an interest in the extended term of said patent can obtain it by addressing the undersigned at Joliet, Ill.

GEO. E. CROSSETT, Assignee.

AMERICAN WATER WHEEL CO., MANUfacturers of Warren's Turbine Water Wheel—Warren & Damon's patent.—Three hundred and twelve of these turbines are now in successful operation in cotton and wool factories, flour mills, saw mills, &c., and are utilizing from 75 to 88 per cent of the power of the water under all heads, from one to thirty feet. The late improvement adds much to its efficiency and great economy in water power. It wholly obviates the well known evil—"the great loss of power from leakage at the periphery of the wheel," as long as it runs without adjustments. This improvement is equally applicable to all iron wheels. The patent right is for sale for a few States only. The fifth annual pamphlet published by the American Water Wheel Co. contains a complete description of the Warren Turbine, with illustrative engravings, a treatise on hydraulics, &c. It will be found useful and instructive to all millwrights and millowners. By application (two stamps enclosed), it will be forwarded to any part of the United States. All communications addressed to ALONZO WARREN, Agent, American Water Wheel Co., 31 Exchange st., Boston, Mass., will be promptly attended to.

BELLOWS' PATENT DRY CLAY BRICK MACHINE.—The undersigned has invented a machine that for cheapness, simplicity, durability, and the production of a superior article, is unequaled. Machines and rights for sale. EPH. H. BELLOWS,
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MARYLAND INSTITUTE, BALTIMORE.—The Managers of this Institute, encouraged by the success of former efforts, announce, with confidence of continued success, their Eleventh Annual Exhibition, to be opened in the Institute's spacious building on the 5th of October, and continue open four weeks. From the 27th to the 30th of September, inclusive, articles will be received for competition and premium, afterwards for exhibition only. Persons from all parts of the Union are invited to contribute. Aside from the general advantages of this Institute for the exhibition of products of the skill and industry of their countrymen, the Managers submit that the present is an opportunity which none should allow to pass unimproved. As business is now rallying from its unparallaled depression, he who, by a judicious exhibition of his ability to meet the demands of that revival, and secure the attention and confidence of the community, insures success, and paves the way to competence and fortune. Circulars with rules, &c., will be promptly furnished on application to JOHN S. SELBY, Actuary.

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These machines have no rival.—[Scientific American.

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Treasurer and Superintendent.

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VAIL'S SPEEDWELL IRON WORKS, Morristown, N. J., manufacture Craig's Patent Double-acting Balance Valve Oscillating Steam Engines both stationary and portable, Knowles' Patent Muley, Portable, Gang and Re-sawing Mills, Sugar and Chinese Cane Mills and Sugar Pans, Grist Mills, Mill Irons, Rich's Water-wheels, Forgings and Castings. Orders for the above, and all descriptions of labor-saving machinery will receive prompt attention.

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CORLISS STEAM ENGINE CO.,
Providence R. I.

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Science and Art.

Construction of Furnaces.

In a paper read before the British Society of Arts, by Charles Sanderson, upon the subject of Iron, he says, as regards the construction of furnaces, that generally speaking, they should have an internal form favorable to the gradual reduction and diminution of the volume of materials charged, which it is important should be so mixed that the earthy matter of the ore and the flux may readily unite; the descent of the materials into the furnace is regulated by the inclination and width of the boshes, and necessarily this inclination or width varies according to the nature of the ore which is to be melted—those which are most easily reduced require the boshes to be most inclined, while those which are difficult of reduction, and consequently require to be subjected to the action of the carbon of the fuel and the gases which are generated, for a longer period, are retained in this part of the furnace by greatly increasing its width, and giving the boshes a greater inclination. In explaining this action of the blast-furnace, he showed how the metal is reduced and carbonized, from which it will appear how difficult it is to obtain a pure metal, because, as it becomes developed in the lower regions of the furnace, it is necessarily mixed with substances forming a variety of metalloids; besides which, it is mechanically associated with the slag, which protects it in the dam from the oxydizing influence of the blast, through which it descends, carrying also with it a mixture of unreduced matter, which, from its gravity, becomes more or less mixed with the metal when it is in a state of pig-iron.

Improved Stave Cutting Machine.

This invention relates exclusively to that portion of barrel or cask machinery designed for cutting the staves. It consists in the employment of an adjustable knife or cutter, corresponding with the intended form of the stave, adjustable gage, and a vibrating bed, arranged in the proper relation to each other to respectively perform the functions of feeding and manipulating the "bolt" from which the staves are cut in an extremely simple, efficient and economical manner.

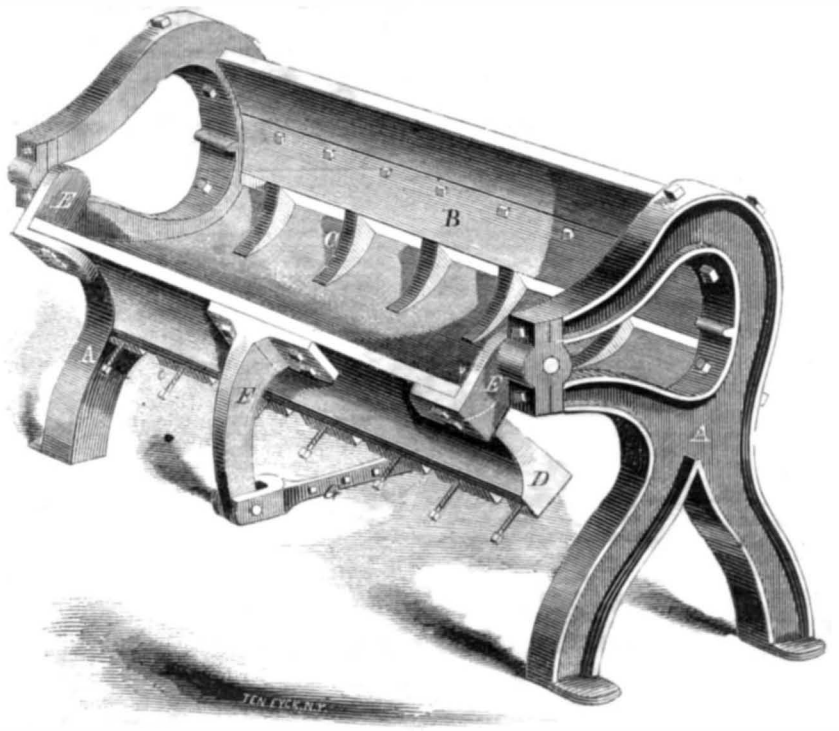
Our engraving represents a perspective view of this improved stave cutter, with a pitman rod attached through which it receives motion.

A A are the upright ends of the frame, which are secured firmly together, and between which a horizontal knife or cutter, B, is secured, by means of screws, or in any convenient manner for enabling its edge to be moved in and out. C are a series of gage pieces, which are secured on an eccentric plate fastened to the end uprights, A, of the frame. The curved faces of these gage pieces are parallel with the face of the knife, and the plate to which they are secured is attached to the uprights by screws, or by any other suitable means to admit of their adjustment to regulate the thickness of the staves. D is a cutting block, or bed piece, which is attached to levers, E E, at each end. These levers are jointed to the upright ends, A A, one to each, by journals turning in suitable boxes at one end, and are secured at their opposite ends to a longitudinal plate or beam, D, which forms the cutting block or surface upon which the stave "bolt" is placed.

The cutting block, D, when raised by the levers or radial arms, E, raises, of course, in the arc of a circle of which the journals are the fulcra, and the inner side of the knife, B, forms a segment of a circle which is concentric with the axis of rotation of the cutting block or bed piece, D, and the radius of the circle, in the arc of which the cutting block or bed, D, moves, is equal to that of the cask to be constructed. These fulcra may, by any suitable arrangement, be made variable, so that staves may be cut for different sized casks or barrels.

The operation is as follows:—The "bolt" from which the staves are to be cut is properly steamed and placed on the block or bed, D, which is then vibrated through the medium of the reciprocating motion of the pitman rod, G, or other suitable device or arrangement. This causes the block or bed, D, to be

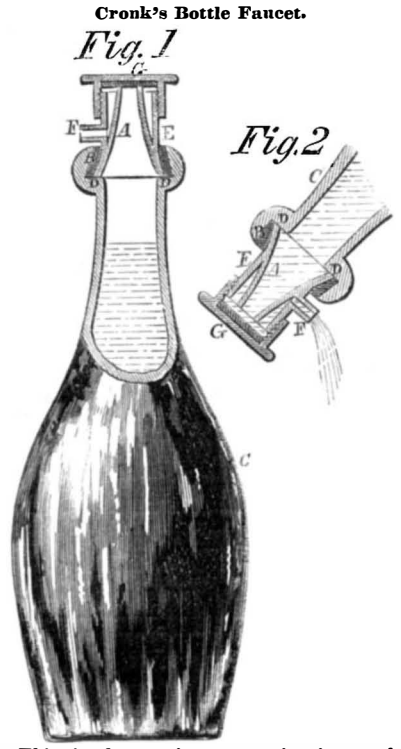
CROSSETT'S STAVE CUTTING MACHINE.



to be thus manipulated, either for the purpose of being turned or withdrawing the core. From the foregoing, it will be observed that gravity aids the manipulation of the "bolt," when being adjusted to the knife at each vibration, and in withdrawing therefrom. This is an important feature, and without it, the "bolt" could not be readily adjusted by the hands above, whereas through the peculiarity of construction and relative actions of the parts observed in this contrivance, these objects are easily and quickly obtained, and without any injury to the attendant.

This machine is admirably adapted to the purpose of its design, being simple and economical in its construction and efficient in its operation. It was originally patented by Isaac Crossett, of Bennington, Vt., July 1, 1844, and subsequently extended for seven years from July 1, 1858, and assigned to Geo. E, Crossett, of Joliet., Ill., who will be happy to furnish any further information.

Cronk's Bottle Faucet.



This simple contrivance consists in attaching to the enlarged neck or mouth of mineral water and other bottles, a metallic casting and screw cap piece, in such a manner as to readily enable a part or the whole of the effervescent liquid in the bottle to escape through a tube at the side of the casting, or to be closely confined in the same.

In our engravings, Fig. 1 is a section of the improved faucet applied to the neck of a mineral water bottle, and Fig. 2 is a section of the same and the neck of the said bottle in an inclined position, with the cap partially unscrewed, to admit the escape of the liquid.

The enlarged end of the tapering or trumpet-shaped tube, A, is inserted in the enlarged space, B, formed in the mouth or neck of the bottle, C. This enlarged space is also made in the form of a frustum of a cone, the neck of the bottle having a shoulder at this part, to admit of its inner enlargement, in which latter it is secured, with its edge resting on the shoulder, D, in the neck of the bottle, formed by the space, by any suitable cement poured into the space, B, between the lower portion of the periphery of the tube, A, and the periphery of the said space. A cylindrical tube, E, is cast or otherwise attached to the tube, A, and extends upward from its periphery to within an eighth of an inch, more or less, of the top edge of the inner tube, A, so as to have a concentric space between the two tubes, A E, which has an outlet through a tube, F, secured to the side of the outer tube, E. On the upper end of the cylindrical tube, E, is screwed a cap, G, having an elastic or leather washer secured to its inner flat surface, and a serrated flange formed on its sides, for enabling it to be turned between the forefinger and thumb, to either screw the leather washer firmly upon the upper edge of the inner tapering tube, A, or to unscrew and raise the same therefrom, and open a passage-way between said upper edge and the cap, to allow the escape of the effervescent liquid from the bottle.

When the bottle is turned to the position represented in Fig. 2, with the tube, F, over the tumbler or other vessel into which the effervescent liquid is to be discharged, the cap, G, can be unscrewed, to admit the required quantity to flow over the edge of the inner tube, A, through the space between the two tubes, A E, and in the event of any of the liquid still remaining in the bottle, the cap can be again screwed tightly upon the edge of the tube, A, so as to effectually stopple the bottle, and keep its contents free from the exterior air. This characteristic is peculiarly desirable in beer bottles, as through it a glass, or a portion of a glass of the liquid can be drawn, and the atmosphere readily excluded from the portion remaining in the bottle, so as to prevent the evaporation of its effervescent properties, and its deterioration by the contact of the air. The saving of corks effected by this permanent stopple would, it is supposed, pay for it in three to four months.

The patent for this novel bottle faucet was issued on the 6th of July, 1858. Any further information can be obtained by addressing the patentee, M. C. Cronk, Auburn, N. Y., or S. D. & J. K. Wackman, who are half owners of the patent.

RAILROAD AT CAPE TOWN—The government of the cape of Good Hope have advertised for tenders for constructing a railroad from Cape Town to Wellington—a distance of fifty-one miles. They estimate the cost at about two and a-half million dollars.

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